

THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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Reading Matter Contents.....page 44
Classified List of Advertisers..... 115
Alphabetical Index to Advertisers 120
Advertising and Subscription Rates 51

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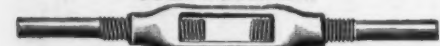
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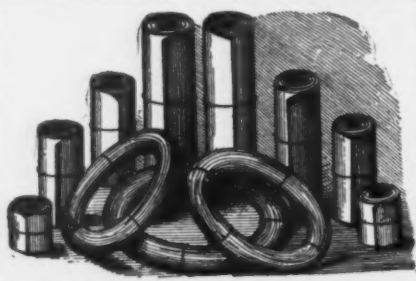
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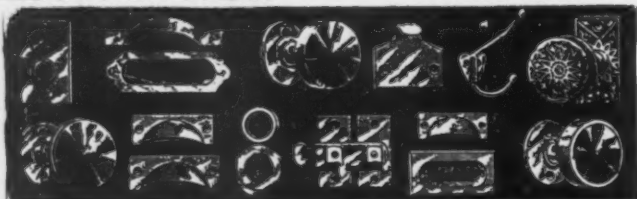
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THE IRON AGE.

THURSDAY, JULY 13, 1899.

The Lavigne Universal Automatic Screw Machine.

The universal automatic screw machines built by the Lavigne Automatic Mfg. Company of New Haven, Conn., may be changed to any class of work with the aid of auxiliary parts, which may be attached or detached at will. All parts are made by special gauges and are interchangeable. The turret machine may be changed to a stud machine, or a stud machine with a drilling attachment, by replacing the turret slide with a plain slide. This enables the manufacturer, as his requirements demand, to change a machine of one class to that of another. The turret is simple in construction; it contains no springs and is equipped with down locking mechanism as well as with the regular locking bar, which makes it abso-

ends of the shaft. The ratio between the fast and slow speeds is 35 to 1. The differential gear mechanism may be taken apart without disturbing the worm. The cross slide is furnished with two tool posts, one or both of which may be used as the nature of the work may require. When necessary for the production of certain pieces an extra turret attachment is provided for the cross slide. There is a micrometer adjustment for regulating the cross slide movement to 1-1000 inch. This easily and quickly takes up any wear on the tools or variation of the setting of the cross slide cams. The tool posts are constructed for the use of circular forming and cutting off tools or straight tools if required. These tools can be ground on the cutting surfaces until entirely used up without changing their shape. Wear is taken up by long taper gibs operated by one collar screw.

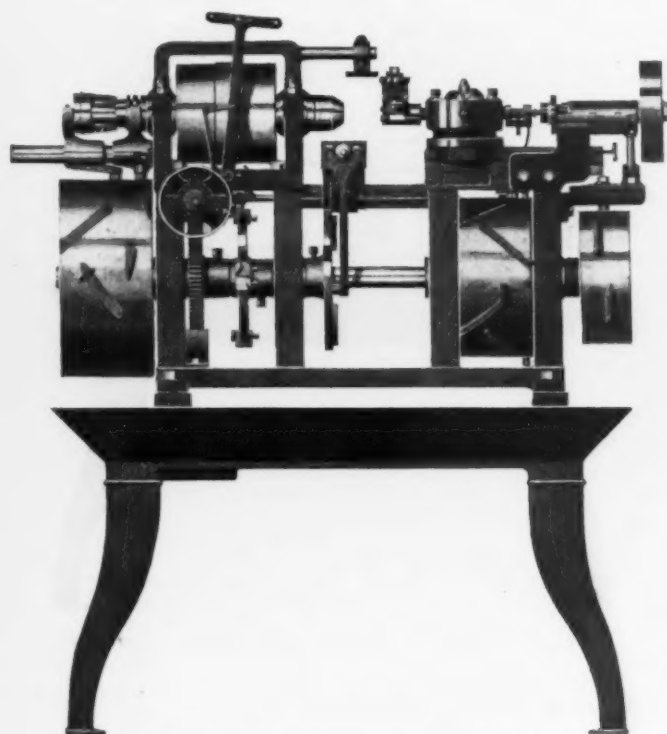


Fig. 1.—Machine for Double End Work.

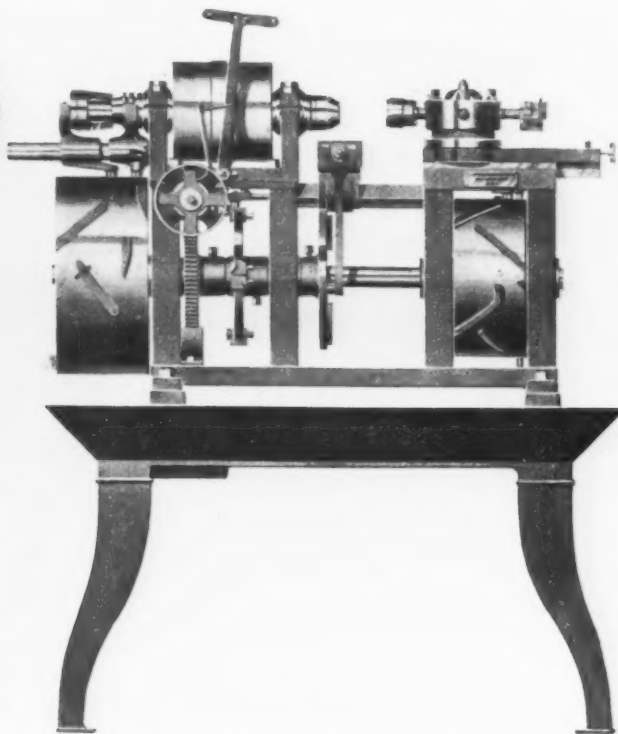


Fig. 2.—Plain Machine for One End Work.

THE LAVIGNE UNIVERSAL AUTOMATIC SCREW MACHINE.

lutely positive. It makes no difference at what speed the turret is revolved, as it is positively rotated and cannot escape or gain a hole. Where a less number of tools is operated than the number of holes in the turret, the latter can be revolved to the tool required without advancing from its position. This is accomplished by a star gear and a series of pins and cams on the periphery of the turret drum. This arrangement saves time and wear on the machine. On its advance the turret is automatically locked and on its return is released, and when it has reached its original position is revolved. The unusual rigidity of the turret insures smoothness of the surface of the parts turned down. The true alignment of the turret is affected by means of a taper gib with four screws located on each side of the locking bar, and which also serve to take up the wear of the bar. The differential gear is so constructed as to stand long and hard usage. The pulleys are arranged on one side and the differentials on the other, so as to bring the strain equally on both

For long or heavy cuts demanding a taper where side forming tools are impracticable, a simple attachment is furnished for accomplishing the desired result. A single point over-shot box tool is directly connected with a small horizontal gear wheel. This latter on the advance of the turret engages with racks arranged on either side or both sides of the gear wheel, as the nature of the work may require. The gear wheel revolves on these racks in either direction, and the cutting tool in turn is either raised or lowered as it advances on the work. Straight turning may be done at any point of the operation by omitting the proper teeth on the racks. On the return of the turret the gear wheel necessarily reverses the motion of the advance, and the cutting tool returns to its original position. By entirely omitting the racks a straight cut will be obtained. But one box tool of this kind is necessary for each machine, and is universal in its use. Furthermore, when regular straight work is required by removing the racks from the overhanging arm,

the circular graduated index plate on the top of the box tool can be set to the 1-1000 inch, thereby obtaining any size desired.

When it is necessary to finish both ends of a piece, the rear end attachment, Fig. 1, is used. The piece on being cut off is retained in a holder and carried with the turret. When opposite its original position it engages with the rear end attachment and is threaded, drilled or slotted, as may be required. This does not interfere with the original operations which are going on independently at the same time with it.

Each machine is equipped with a rotary oil pump, which is directly connected with the differential gear shaft, and which insures a sufficient supply of oil to the tools when in operation. In the old method of using a belt to run the oil pump, the belt would become soaked in oil and have a tendency to slip and consequently the oil pump would not perform its function of supplying a sufficient flow of oil.

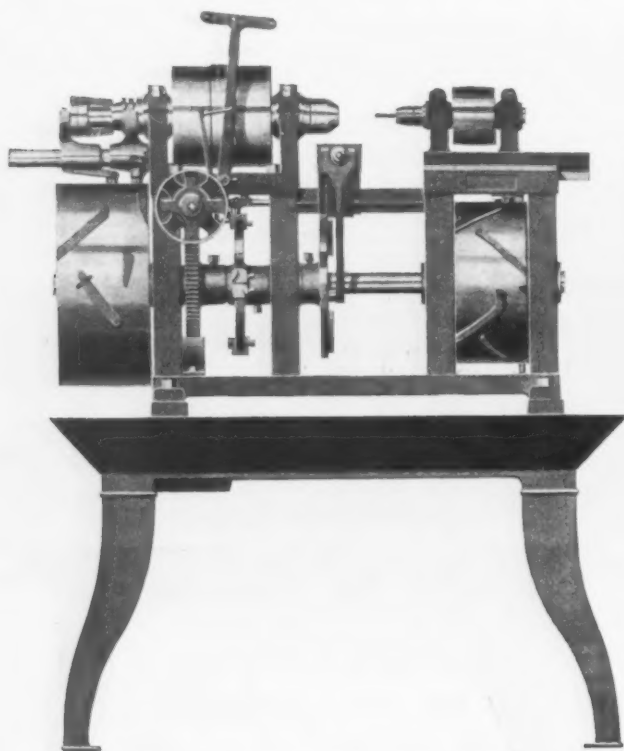


Fig. 3. - Machine with Attachment for Making Rolls.

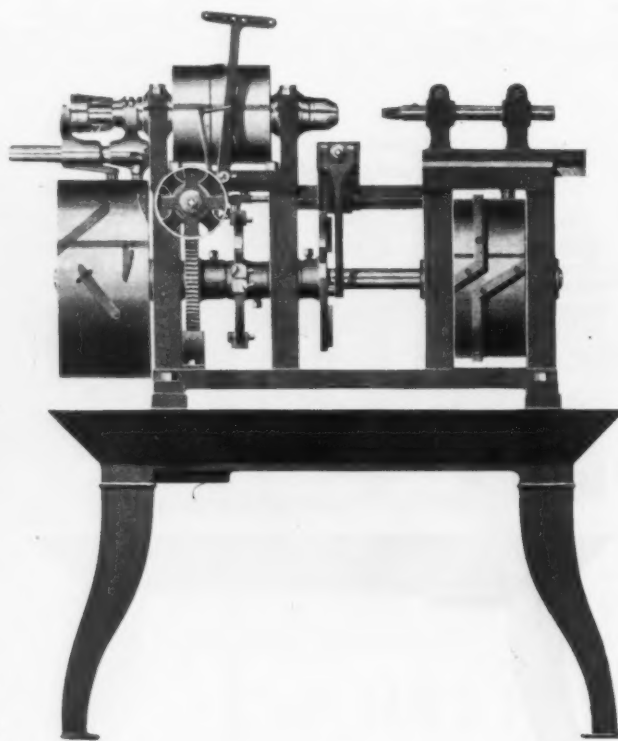


Fig. 4. - Machine Provided with Rear Slide for Stud Work.

THE LAVIGNE UNIVERSAL AUTOMATIC SCREW MACHINE.

The countershaft for each machine has self-oiling boxes, three-step cone for the differential gear pulley, and necessary pulley for the spindle. The cone pulley is furnished with friction clutch.

On June 29 the stockholders of the Dominion Coal Company, by the unanimous vote of 144,552 shares, ratified the proposed contract with the Dominion Iron & Steel Company. This contract provides that the coal company shall supply the iron and steel company with coal at \$1.20 per ton (this price to be subject to revision every ten years), and that the iron and steel company shall have the right on January 1 or July 1 up to January 1, 1903, to lease the Dominion Coal property, paying all the latter's fixed charges and 6 per cent. on the common stock. If at any time the output of the coal company exceeds 3,500,000 tons, the lessee shall pay the lessor an additional 15 cents per ton. Payments on account of the lease are to be made semi-annually, on June 15 and December 15. The sum of \$600,000, to be deposited before the lease goes into effect, shall be forfeited to the coal company in case the lessee fails to make the payments provided in the lease.

The concession for the working of the Elba iron ore mines and the Follonica iron works, held by Tonietto & Co. of Leghorn, has been purchased by the Credit Italien, and a large new company are to be formed to exploit the same.

An Important "Trust" Decision.

The New Jersey Court of Errors and Appeals, in Trenton, N. J., rendered last week a sweeping opinion reversing the decision of Vice-Chancellor Grey in the cases of the Trenton Potteries Company against Richard Oliphant and others. The Trenton Potteries Company is the so-called Sanitary Ware Trust, formed a few years ago by the purchase of five sanitary potteries in Trenton, including the Oliphant pottery. Under the terms of the purchase the potteries selling out all entered into a written agreement not to start again anywhere in the United States, except in Nevada and Arizona. Notwithstanding this agreement the Oliphants subsequently started in opposition, and the Vice-Chancellor refused to restrain them on the ground that the contract was in restraint of trade. The Court of Errors, in its opinion, said it is not a question whether sanitary ware is a necessity of life, and also remarked that the contract did not take out of business any large proportion of those engaged in it. The significant part of the opinion is that corporations in New Jersey have, under authority of legislative acts, the right to buy the capital stock and business of other cor-

porations, and that a contract such as that made by Oliphant would be necessary to secure the full benefit of such purchase. The court said it must be guided by the legislative authority given to those corporations, and therefore holds the contract made by Oliphant to be enforceable regardless of the question whether it restrains trade or not.

After commenting on the legislative power of one corporation to purchase and hold the stock of other corporations, the court's opinion is worded as follows: "Under such powers it is obvious that a corporation may purchase the plant and business of competing individuals and concerns. The Legislature might have withheld such powers, or imposed limitations upon their use. In the absence of any prohibition or limitation on their power in this respect it is impossible for the court to pronounce acts done under legislative grant to be inimical to public policy. The grant of the Legislature authorizing and permitting such acts must fix for the courts a character and limit of public policy in that regard. It follows that a corporation empowered to carry on a particular business may lawfully purchase the plant and business of competitors, although such purchase may diminish, or for a time destroy, competition. Contracts for such purchases cannot be refused enforcement. Contracts reasonably required to make such purchases effective by protecting the purchaser in the use and enjoyment of the thing purchased cannot be declared by the courts to be repugnant to public policy. The interference with competition resulting from such purchases under legislative

commission being found not to invalidate contracts for such purchases, the like interference by contracts reasonably required for the protection of the purchaser cannot be held to invalidate them."

The Iron Industry of Austria.

In March of the current year the Austrian Society of Engineers celebrated a jubilee, which representatives of many engineering bodies attended. Among them was Bennett Brough, secretary of the Iron and Steel Institute, who has just submitted a report to the council of the institute. In this report he quotes some data from a paper by E. Heyrowsky on the progress of the Austrian iron industry from 1848.

Fifty years ago all the blast furnaces used charcoal as fuel, with the single exception of the Wittkowitz works, then belonging to Baron von Rothschild, which as long ago as 1831 possessed one coke blast furnace. The production of these charcoal furnaces was very small, not more than 1 to 10 tons in 24 hours. Cold blast was used and the copper tuyeres were not kept cool. The pig iron was treated in small finery hearths with charcoal; the yearly out turn of a hearth of this kind did not exceed 100 to 200 tons. The iron was worked with tilt hammers driven by water wheels, and at only a very few works were there puddling furnaces, welding furnaces or steam rolling mills.

The production of pig iron in Austria was as follows in the years named:

Year.	Tons
1848.....	155,738
1859.....	244,677
1869.....	262,630
1879.....	294,185
1889.....	586,121
1897.....	887,914

The total production of pig iron in Austria 50 years ago was only 155,738 tons. This amount was obtained from 132 blast furnaces. Consequently the out turn per blast furnace averaged 1200 tons. Strenuous attempts were then made to concentrate the working, to increase the out turn of the furnaces and to improve the whole manufacture. The waste gases of the furnaces were collected and utilized for heating the blast, for roasting the ore and for heating steam boilers; water jacketed tuyeres were employed, the boshes were cooled and mechanical hoists adopted. The finery hearths were discarded and replaced by single and double puddling furnaces and welding furnaces; steel puddling was introduced, and rails were made either with puddled steel heads or entirely of puddled steel of excellent quality; the manufacture of cement steel was introduced and that of cast steel greatly extended. Difficulties in the use of poor coal, rich in moisture and ash, were overcome by methods of gas firing. Directly after Bessemer's discovery had been applied in England and in Sweden, it was adopted by Austria. On November 23, 1863, the first Bessemer charge was blown at Prince Schwarzenberg's works at Turrach, in Styria. This was owing to the initiative of the great metallurgist, the Ritter Peter von Tunner. The Turrach works were soon followed, also at Tunner's suggestion, by the Bessemer works at Hof, in Carinthia (1864), and in the same year by the Bessemer works at Neuberg, and soon afterward Bessemer plants were erected at Ternitz, Teplitz, Graz, Zeltweg, Wittkowitz, Kladno, Prevali and Trienitz.

With the introduction of the Bessemer process Austria entered upon a new era of increased outputs and reduced costs. Consequently, in 1867 and 1868 the Government sold all its iron works. Joint stock companies were formed and new branches of manufacture were adopted. In the third decade of the 50 years under review new blast furnaces were built at Schwechat and Judenburg in Styria, and at Liebschitz and Rokitzan in Bohemia; rolling mills were started at Köflach, Wasendorf, Unzmarkt and St. Michael in Styria, and steel works and wire mills at Graz.

The mean out turn was increased to 4650 tons per year per furnace and extensive use was made of the Siemens regenerative system. The production of Bessemer metal, beginning in the year 1863 with 21 tons, reached 70,000 tons in 1873 and 100,000 tons in 1878. The last two decades of the period under consideration presented a remarkable development in the Austrian iron industry. This was due to the fact that the basic process rendered it possible to utilize phosphoric iron ores. This process was first put in practice by Thomas and Gilchrist in 1878, and in the next year (1879) the first charge was blown by this process at Kladno, in Bohemia. In the same year the Teplitz works and the Wittkowitz works also adopted the basic process. In this year the latter works passed from the possession of Baron von Rothschild into that of the Wittkowitz Mining & Iron Works Company, and were converted by the skill of Paul Kupelwieser and the Ritter Max von Guttman into one

of the greatest iron works in Austria. The basic process was soon adapted to the open hearth process, and came into use in Bohemia, where it rendered possible the utilization of the phosphoric ores of the Nucvizer mines. By the powerful initiative of Carl Wittgenstein the Kladno plant was adapted to the new process and considerably enlarged, the Fürstenberg Iron Works (now the Bohemian Mining Company) coming into the new combination. Under his powerful hand entirely new works arose, such as the Carl Emil works and the blast furnace plant at Königshof, near Beraun, the sheet rolling mills at the Rudolf works at Teplitz, and quite recently (1890) the cast steel works, the Poldi works at Kladno.

In 1888 the Wittkowitz works started making armor plates, which proved very satisfactory. About the same time another new branch of industry was started in Austria—namely, the manufacture of wrought iron tubes at Wittkowitz and at the Haltschinsky works, Schönbrunn, near Moravian Ostrau. In 1892 the railway from Leoben to Eisenerz was completed, and the supply of excellent iron ore thus rendered available led to the building in 1896 at Donawitz of a large coke blast furnace, which has now the greatest daily out turn of pig iron, 240 tons in 24 hours, in Austria. As a new creation of quite recent date the blast furnace plant at Servola, near Trieste, may be mentioned. It is built after the American style and was blown in on November 24, 1897. English coke and Spanish, African, Greek and Bosnian iron ores are used.

It is thus evident that the iron industry of Austria has made considerable advances. Whereas in the fifties a blast furnace with a daily out turn of 20 tons and in the seventies one with a daily out turn of 50 to 60 tons were about the largest, at the present time there are blast furnaces which produce daily 160 tons (Kladno), 180 tons (Wittkowitz), 220 tons (Königshof) and 240 tons (Donawitz and Servola) of pig iron, and a new furnace is projected at Eisenerz with a daily out turn of 400 tons. The production of mineral fuel has increased in a remarkable manner during the period under review. The output of coal in Austria in 1848 was 716,412 tons; in 1897 it was 10,492,770 tons. The output of brown coal in 1848 was 409,521 tons; in 1897 it was 20,458,092 tons.

Putting a New Bow on a Wrecked Steamer.

A highly interesting feat of marine salvage and repair is described in the *London Engineer*:

The steamship "Milwaukee" was built by C. S. Swan & Hunter at Wallsend-on-Tyne, in January, 1897, for the fleet of Elder, Dempster & Co. of Liverpool, with a view to her employment in that firm's North American trade. She is still ranked as a very large steamer, notwithstanding the great advances which have been made in the production of heavy cargo carriers during the short time which has elapsed since she was launched. Her principal dimensions were: 470 feet long by 56 feet broad, and 31.9 feet registered depth, her molded depth being 34 feet 9 inches. With these dimensions she measured 7317 tons gross, and 4755 tons net register tonnage.

After making several voyages she started last autumn upon a run from the Tyne to New Orleans in ballast, but unfortunately went ashore upon the rocks at Port Errol near Peterhead. Upon examination it was found that she was locked in place by a huge rock 30 feet in length and 8 feet high, which held her in such a manner that it was impossible to float her. In this state of affairs the task of doing the best possible for all concerned was intrusted to the Liverpool Salvage Association. It was at once seen that the whole of the vessel could not be saved, but that, while a large piece of the fore end was inextricably jammed, the remainder, if detached therefrom, might perhaps be successfully floated to a convenient place for repairs. To effect the severance a belt of dynamite cartridges was exploded around the shell of the vessel at the place deemed most suitable for dividing her, and after several such explosions a complete division was made without seriously injuring the adjacent parts of the structure. To show how strongly constructed is the "Milwaukee," it may be mentioned that no less than 520 pounds of dynamite were exploded in cutting her asunder. But by far the most interesting commentary upon her strength, and the excellent class of work turned out by her builders, is afforded by the subsequent behavior of the transverse water tight bulkhead at the forward end of the boiler space, upon the strength and tightness of which the vessel depended for flotation until placed in dry dock for repairs on April 19, 1899. When cut in two the after part, extending from just before the forward end of the navigating bridge, was towed to the Tyne and moored in that river until a new bow end was built, launched and made ready for connection to it. And here it is further worthy of remark that not only was the after part of the "Mil-

waukee" floated from Port Errol to the Tyne, but that it was towed with the bulkhead end foremost, and that the tug boats were assisted by the ship's own engines.

On her arrival in the Tyne, her builders set to work to reproduce a fac-simile of the piece left behind on the Scottish coast. This bow end was launched on April 12, 1899, and for several days afterward the bow and stern portions of the "Milwaukee" floated side by side and pointing in the same direction: one of the very few cases, if not the only one, in which the bow and the stern of a vessel have been known to look the same way.

The repairers were very successful in their attempt to dry dock the two pieces in correct relative positions, and but little subsequent adjustment was found necessary. Moreover, the new bow piece so correctly reproduced its predecessor that a stranger would never suppose he was not looking at the original bow, and would find it impossible to point out where the junction was effected. In point of fact, the "Milwaukee" is now as perfect and as strong as ever she was, and how sufficient that strength is will be evident to any one who considers the serious test it has undergone. So accurately has the work been done that the vessel's principal dimensions are exactly as they were before, and her gross tonnage differs by only 6 tons from that which it was originally.

Forgings and the Machines Used in Producing Them.

At a meeting of the Institution of Civil Engineers Mr. Parker read a paper on "Forgings and the Machines Used in Producing Them," in which he said:

With regard to tools, the basis for accurate forging is die forging, and the idea of making dies or tools having an impression of the whole or part of the article re-

quired is no doubt widely used with more or less endeavor to approximate what dies should be, and what they may be expected to do.

quired is no doubt widely used with more or less endeavor to approximate what dies should be, and what they may be expected to do.

Dies as tools have been greatly utilized by trades having little or no affinity with the more important branches of the engineering trade; and by their means work of great utility and beauty is produced—cheaply produced—in various metals, which could be obtained, excepting to a very limited extent, by no other means; but within the engineering circle, which depends entirely upon the various metals for its existence, the function of the die maker is ignored and practically unknown. It would perhaps be an interesting query to put to the heads of some of the large engineering works, employing probably hundreds of smiths, how many die makers are employed to provide those smiths with tools.

Molders, who to a very great extent may be compared with smiths as fellow workers in metal, are not expected to do much without assistance from the pattern maker; there are many points of affinity between the pattern maker and the die maker; and there is no doubt that the die maker has yet to be appreciated by managers of engineering works, because it is by means of dies that properly formed forgings are to be obtained.

The main thing, however, which comes within the province of the engineer to provide for the forger is a suitable form of power for actuating the dies or tools, having in mind that the plastic or forgeable condition of wrought iron or steel, when obtained, cannot be retained beyond limited periods, especially in the case of articles having thin or light parts, when its duration is very brief. This power must be capable of instantaneous application; it must be simple and ample, and the essential feature for producing the proper effect is that it must be of the same kind as the smith, with his limited physical strength, naturally produces with hand hammer or sledge—that is to say, a perfectly elastic blow of sufficient force to produce an immediate and substantial effect upon the material.

In this short paper; but for finished forgings—viz., forgings that do not need truing and finishing by some other process—the steam hammer is not satisfactory; it is too rigid, its blow is too dead. Hydraulic power, the application of cams, cranks, &c., are also unsuitable, for the same and other reasons.

Both these systems evidently have objectionable features and very limited powers; but until quite recently they have compassed the development toward smiths' and forgers' essential requirements—i. e., a potent elastic blow.

Recently is advisedly said. It is within the writer's knowledge that the engineers of the London & North-western and Great Western railways have lately adopted a system which affords the necessary power in a satisfactory way, practically without limit. They are already making forgings of moderate dimensions which it would surprise many engineers to see, but they are also rapidly moving toward producing their largest parts in the same way. There is no doubt that in the near future the forged joints, links, pistons, connecting rods, &c., will leave the smithing and forging department true to

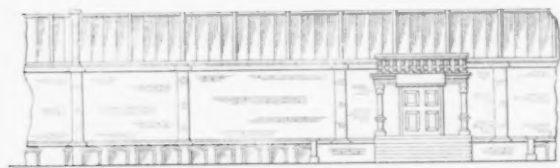


Fig. 1.—Partial Side Elevation.



Fig. 2.—Partial End Elevation.

THE NEW BUILDING OF THE WESTON ELECTRICAL INSTRUMENT COMPANY.

form and measure as required, with 1-16 or 1/8 inch, as the case may be, for facings, and no more. The elementary principles of this system are similar to those which have established themselves in die forging small articles. Its main feature is a development in the way of power, in order to produce large forgings with dies of equal quality to the small forgings hitherto made with dies.

The vibrations from blows of sufficient power and elasticity—or sharpness—to cause metal at a moderate heat to flow completely into the impressions of the dies, and to make clean work, are calculated to destroy any rigidly built machine. In these machines, not any of the parts affected by the work are bolted together or any wise rigidly fixed; the guides are held and the dies set in position by flexible means—i. e., the lower end of each guide fits into a recess in the base block, the top end passes up into a socket having sufficient clearance for wood packing; the wood is intended to absorb vibrations which pass up the guide rod. The lifter for raising the hammer is a new application of very simple construction. It is a cylinder having suitable passages for steam or compressed air with a part rotating piston; arms are secured to the piston rod a convenient distance from the cylinder; the ends of the arms are attached to the hammer by either ropes, chains, or steel bands. The efficiency of this lifter is proved; it can be made to operate a gravitation hammer of any weight, therefore any imaginable forgings can be made by its means. It is safe to say that forging by machinery is in its early stages. It has hitherto made slow advances, partly no doubt because most smiths and forgers—workmen—have great reluctance to accept and use labor saving tools. The force of circumstances, however, is moving the question of cheaply producing forgings in quantities and reliable in shape and dimensions.

The scarcity of open hearth steel has led recently to importations of foreign basic open hearth steel wire rods both into this and into the Canadian markets. The rods are used chiefly for the manufacture of wood screws.

The New Building of the Weston Electrical Instrument Company.

From an architectural point of view the new factory to be erected by the Weston Electrical Instrument Company, at Waverly, N. J., embodies many features of

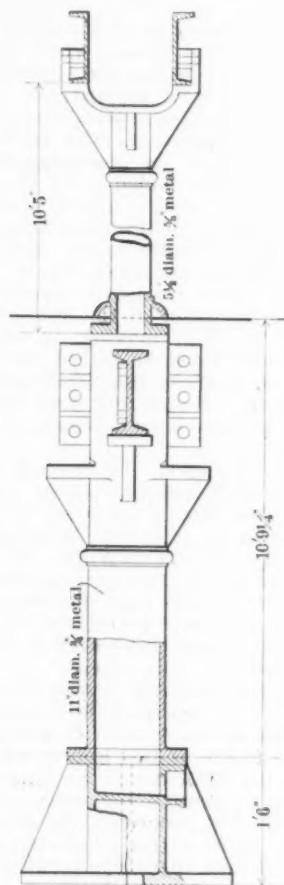


Fig. 3. Detail of Columns

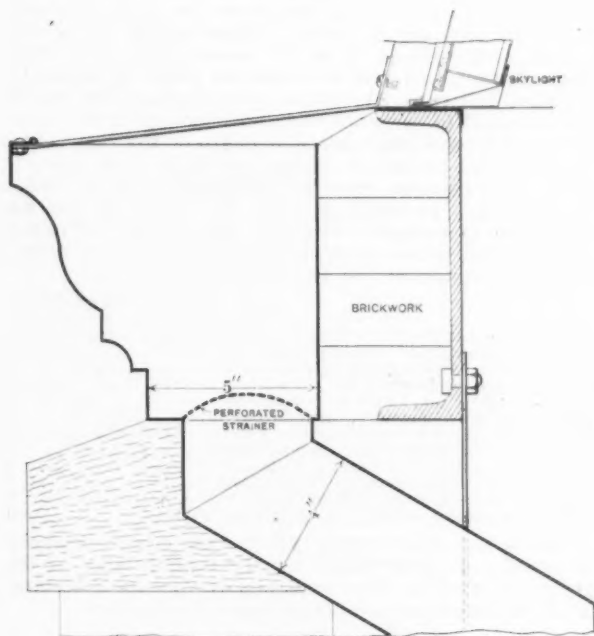


Fig. 4.—Detail Outside Gutter.

This provides ample light, since the glass area of the roof is three-eighths that of the floor space. In addition to this unique arrangements are provided for leading away the roof water and the water of condensation of the roof, use being made of the hollow supporting columns as leaders. As both dust and moisture are extremely dangerous to the fine instruments made by the company, it is of the utmost importance that both be entirely eliminated. It is expected that this construction will perfectly accomplish the result.

The new factory is to be built at the southeast corner of Frelinghuysen avenue and the road leading to the Waverly station of the Pennsylvania Railroad. The office building runs parallel with the main factory and faces this road. The main building is 241 feet 8 inches long on the avenue, by 193 feet 8 inches wide, being connected by a gangway 18 feet long and 17 feet wide, outside, with the main office building, which is 41 feet 8 inches by 105 feet 8 inches. The whole covers an area with the annexes for water closets, &c., of 53,000 square feet, or 1½ acres.

The level of the main floor is 4 feet above the ground, and its height is 11 feet between the floor level and the lower chord of the roof trusses. Underneath this floor is the basement, 9 feet from the underline of the main girders to the asphalt floor. The iron construction forming the main floor consists of a frame work of steel girders carrying a cement flooring, consisting of ribbed steel bars with concrete above and between them, to which is directly nailed the double wooden flooring, consisting of one layer of 3 x 6 inch spruce, and a top layer of 1¼ x 3 inch factory maple. The main girders of the frame work are 20 feet high, 20 feet from center to center, and weigh 32 pounds per foot. This frame work is carried on cast iron columns spaced 20 feet apart from north to south and 16 feet from east to west. Each column connects vertically with a lighter cast iron column, Fig. 3, which supports the roof trusses. Through each of these columns the water from the roof is discharged into the lower columns and from there into the sewer pipes running under the basement flooring, as shown in Fig. 6.

The entire roof of the factory consists of a number of shed roofs of the saw tooth type, Fig. 2, the shorter side of the triangle of which is placed at an angle of 72 degrees and is furnished with ribbed glass. The roof is composed of 12 bays, each running the whole width of the building, 193 feet 8 inches, and consisting of 22 trusses 8 feet apart, made of double angle iron. The glass plates are 2 feet wide, 8 feet high, ¼ inch thick and rest in a copper frame with steel supports. The other or long side of each section of the roof is covered with 2-inch pine planking, to which is fastened asbestos roofing composed of strong canvas and asbestos felt and connected together and compressed into a flexible roofing sheet without coal tar or shoddy.

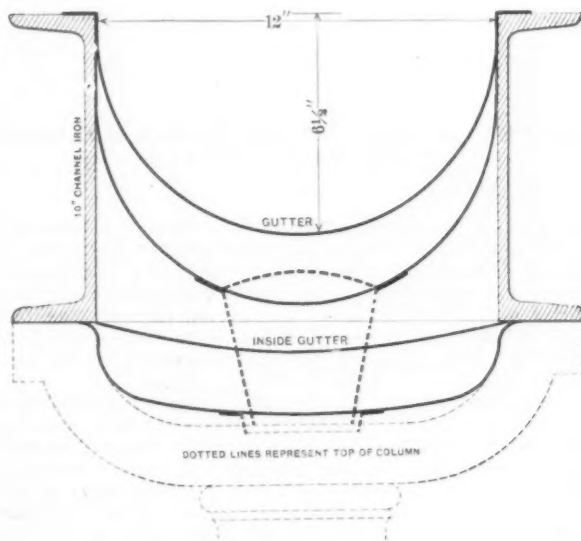


Fig. 5.—Detail Saw Tooth Gutter.

THE NEW BUILDING OF THE WESTON ELECTRICAL INSTRUMENT COMPANY.

striking originality and which mark a wide departure from usual construction. The structure is one story in height, with a basement. The latter is lighted by windows on three sides, but the former is inclosed by masonry walls without any openings whatever, all the illumination being obtained through the saw toothed roof, so arranged that all the light is from the north.

Between each two sections are gutters made of copper and fastened to the channel iron carrying the roof, as indicated in Fig. 5. This gutter, as will be seen from the engraving, is composed of three separate and distinct troughs; the upper one takes care of all storm water, the middle one immediately beneath it is arranged to lead away all water of condensation, while the third one takes

care of any leakage and prevents drip due to condensation.

The basement has, in the direction from east to west, on the northern side, 17 4-foot windows, arched on top, and all being 3 1/4 feet high. On the southern side, on account of an additional bay without any basement, there are no windows. The east and west sides are also fully provided with windows. The east, west and south sides have annexes for water closets and bathrooms, which are 21 x 24 feet 2 inches. The annex on the south side, by reason of the additional bay without any basement, connects with the basement through a gangway. The annexes have windows in the basement and on the main floor. Both the east and west sides are provided with extensions 7 x 12 feet, closed by trap doors, and which are to be used for the delivery of heavy machinery into the basement. Since the basement is naturally lighted by windows only from three sides the center space will be illuminated artificially, and will be used for the storage of raw material and finished instruments.

The office building will contain on one side the commercial, and on the other the technical department. Its design of flooring and roofing is the same as that of the factory building, light coming only through the roof. The main entrance consists of a porch with a balustrade

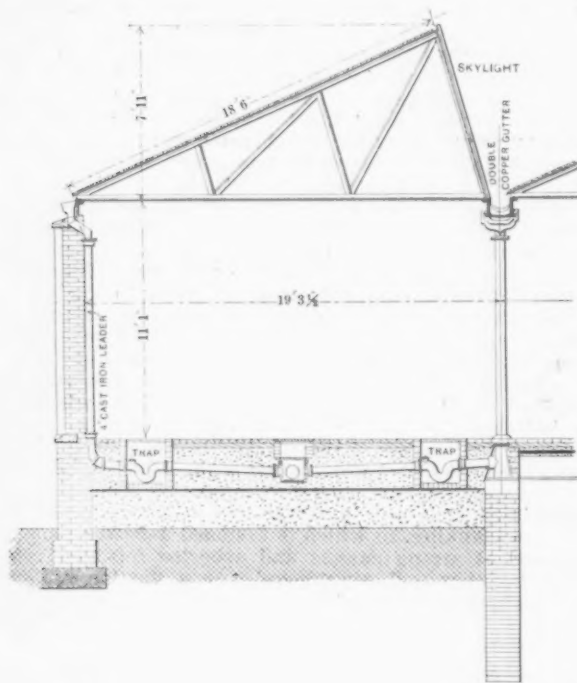


Fig. 6. Detail of Roof, Showing Drainage.

THE NEW BUILDING OF THE WESTON ELECTRICAL INSTRUMENT COMPANY.

on top and six steps leading to the porch. On both sides of the porch and extending beneath it are staircases for the entrance of the men and girls employed in the works. These entrances lead to the basement, where the lavatories and clothing closets are arranged, one washbowl and cabinet being provided for each employee. From here the latter pass on separate staircases to the main factory floor.

Sufficient water closets and urinals are provided on three sides of the building, also sufficient drinking pumps. This disposition was made in order that there might be as little time as possible lost by the employees in traveling to and from them. In the basement are bathrooms for the girls and shower baths for the men, also large dining halls for all where meals may be obtained from a specially arranged kitchen situated between the men's and girls' dining rooms. The water supply of the building is obtained from a well and stored in a tank of 30,000 gallons capacity, placed outside of the building on a special structure, and at a height adequate to give sufficient pressure. The office of the superintendent will be near one side of the main floor, and being elevated 4 feet above the floor, will command a general view of the entire interior. The different departments are to be divided from each other by glass or screen partitions but 4 feet high. The motive power is derived from the power house placed outside of the building, and containing boiler, steam engine, dynamos and so on. From the generators wires run to the several motors in the factory

which drive groups of small tools by means of shafting, or which are coupled directly to the larger machines. Besides the electric current compressed air will be largely used, partly for the transmission of power and partly for direct mechanical manipulation and also for cleaning.

American Tin Plate Works.

The *Metal Worker* has just published its semi-annual list of American tin plate plants, which shows that the total force of active mills at the end of June 30, 1899, was 288, an increase of eight for the quarter. Of these mills 272, or nearly 95 per cent., are owned and operated by the American Tin Plate Company. The additions made to the producing capacity of the American tin plate industry in the three months ended June 30, 1899, include three hot mills at the Morton plant, Cambridge, Ohio; one mill at the Atlanta plant, Atlanta, Ind.; four mills at the National plant, Monessen, Pa., and four mills at the United States plant, Demmler, Pa., all of which are owned by the American Company, as well as one new hot mill added to the plant of the Whitaker Iron Company, Wheeling, W. Va., making 13 new hot mills. Against this increase must be placed the three mills of the Britton Works, at Cleveland, Ohio, and two mills of the Ohio River Works, Remington, Pa., which have been dismantled during the quarter, leaving a net gain of eight new mills.

The 14 idle mills belong to five of the American Tin Plate Company's plants, which are being dismantled and the machinery removed to other points—namely, the Baltimore and the Stickney works, at Baltimore, Md., the Somerton Works, Brooklyn, N. Y., and the Ohio River and Britton plants, referred to above. Arrangements have not yet been definitely concluded as to where these 14 mills will be erected, but they will be added to other works more favorably located than those in which they were originally placed.

The mills noted as building include eight that are being added to plants belonging to the American Tin Plate Company, and two of the Alcania Company, whose new plant, at Avonmore, Pa., is just approaching completion. All these new mills will shortly be finished and ready for work. The aggregate of hot mills, active, idle and building, gives to the American tin plate industry a grand total of 312 mills, with a producing capacity, were all in full work, of over 10,000,000 boxes a year.

Dipperies.

The list of active dipping works is becoming steadily smaller, through the difficulty experienced by these concerns in obtaining their supplies of black plates. Not counting the plants which dip plates for their own use exclusively, only the dozen or so firms named below can now be fairly classed as active works, manufacturing for the market, and few of these are running regularly or to their full capacity. Those dipping concerns which have managed to carry on their business up to the present have done so either on the strength of the reputation of their special brands of roofing ternes or other specialties, or else because they are affiliated with an independent mill. In ordinary lines the dipperies are no longer able to compete with the mills. The following dipping plants, which are running more or less regularly, may be considered on the active list:

	Number of tinning sets.
American Tin Plate Machine & Mfg. Company, Canal Dover, Ohio.	11
Cincinnati Corrugating Company, Piqua, Ohio	1
Follansbee Bros. Company, Allegheny, Pa.	5
Hamilton, John, Hazelwood, Pa.	3
Laufman (P. H.) & Co., Limited, Apollo, Pa.	2
Laufman Tin Plate Company, Butler Junction, Pa.	4
McDonald (The Jas.) & Sons Company, Cincinnati, Ohio.	2
Merchant & Co., Incorporated, Philadelphia, Pa.	8
Meurer Bros. Company, Brooklyn, N. Y.	8
Norristown Tin Plate Company, Norristown, Pa.	7
Taylor (N. & G.) Company, Philadelphia, Pa.	22
Wheeling Corrugating Company, Wheeling, W. Va.	9

Besides the above there are a half dozen concerns who operate dipping plants for the manufacture of tin plate to be used in their own can or tinware factories, but whose plates are not placed upon the market.

The Toledo papers report that A. W. Houston, former president of the Toledo Rolling Mill Company, now owned by the Republic Iron & Steel Company, is organizing a company to build another mill at that place.

The Compress Wheel Company, 16 North Canal street, Chicago, are issuing each month a large card bearing the calendar for the month on one side printed in large plain figures, while on the other side attention is called to their polishing wheels. The cards are printed in different colors for each month and the printed matter is also varied. The method of advertising is unique and attractive.

A New System of Valves for Steam Engines, Air Engines and Compressors.*

BY FRED W. GORDON, PHILADELPHIA, PA.

In steam or air motors there are four valves in each head, two for the inlet and two for the exhaust, each pair

the center of the rock shaft, one valve moving it into the cylinder, the other away from it to open their ports. The valves are in equilibrium as to current and pressure. If we are referring to the head end of the cylinder, and the piston is at the dead point at that end, then the ends of these valves may be flush with the inside of the cylinder head, and the only clearance will be the circular bevelling

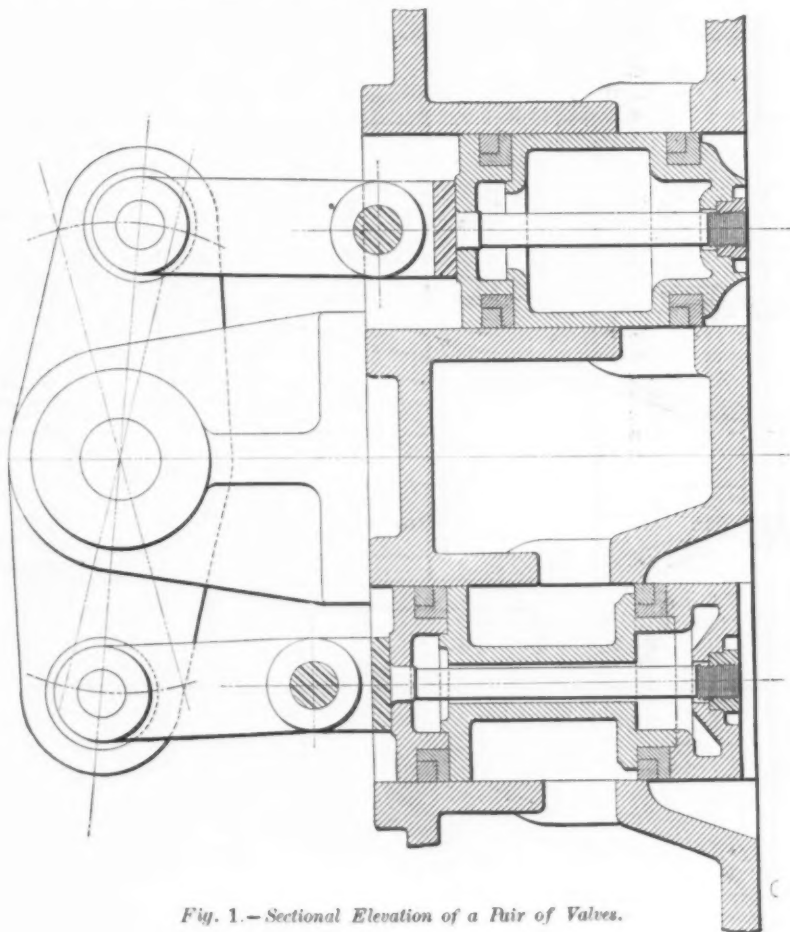


Fig. 1.—Sectional Elevation of a Pair of Valves.

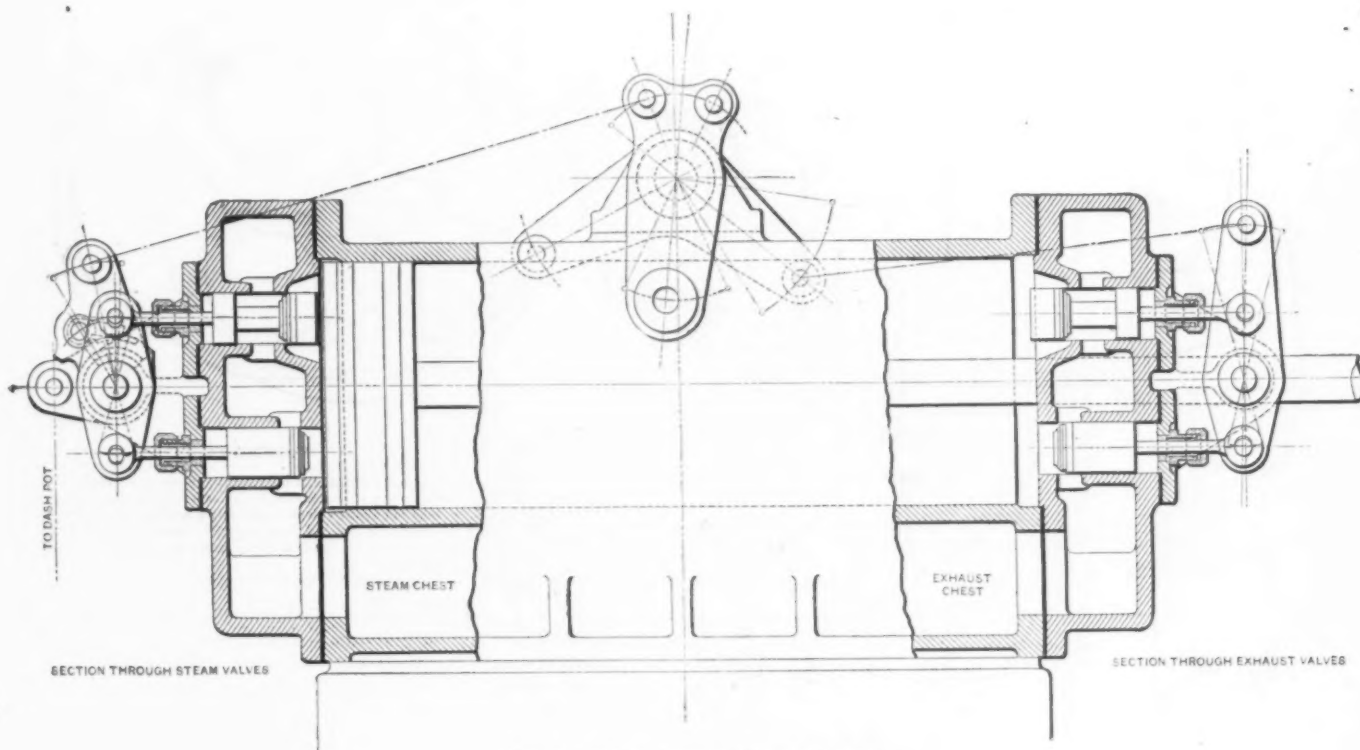


Fig. 2.—Section through Exhaust Valves.

NEW SYSTEM OF VALVES FOR STEAM ENGINES.

being an exact duplicate of the other. A valve really consists of a pair of valves, of the same diameter, connected by links to a rock arm, at an equal distance from

of the ends of the valves which move outward, and the ribbed chamber around the ends of the valves which move inward to open, together with whatever clearance is thought proper to avoid contact between the piston head and cylinder head. This total clearance need not

* Abstract of paper presented at the Washington meeting of the American Society of Mechanical Engineers.

exceed one-half of 1 per cent. for ordinary Corliss engine proportions as to diameter and stroke. The excess of the surface exposed to the steam upon its introduction to the cylinder is not more than 9 per cent. above the area of the piston head and cylinder head. A minimum of clearance, a minimum of surface to reduce internal condensa-

is it necessary to call special attention to the method of packing the piston valves, as that is not essentially a part of the system, though it is believed the double ring shown is the best—it certainly has proven to be tight.

These valves being placed in the heads of the cylinder, and the valve cylinder's bore being parallel with the

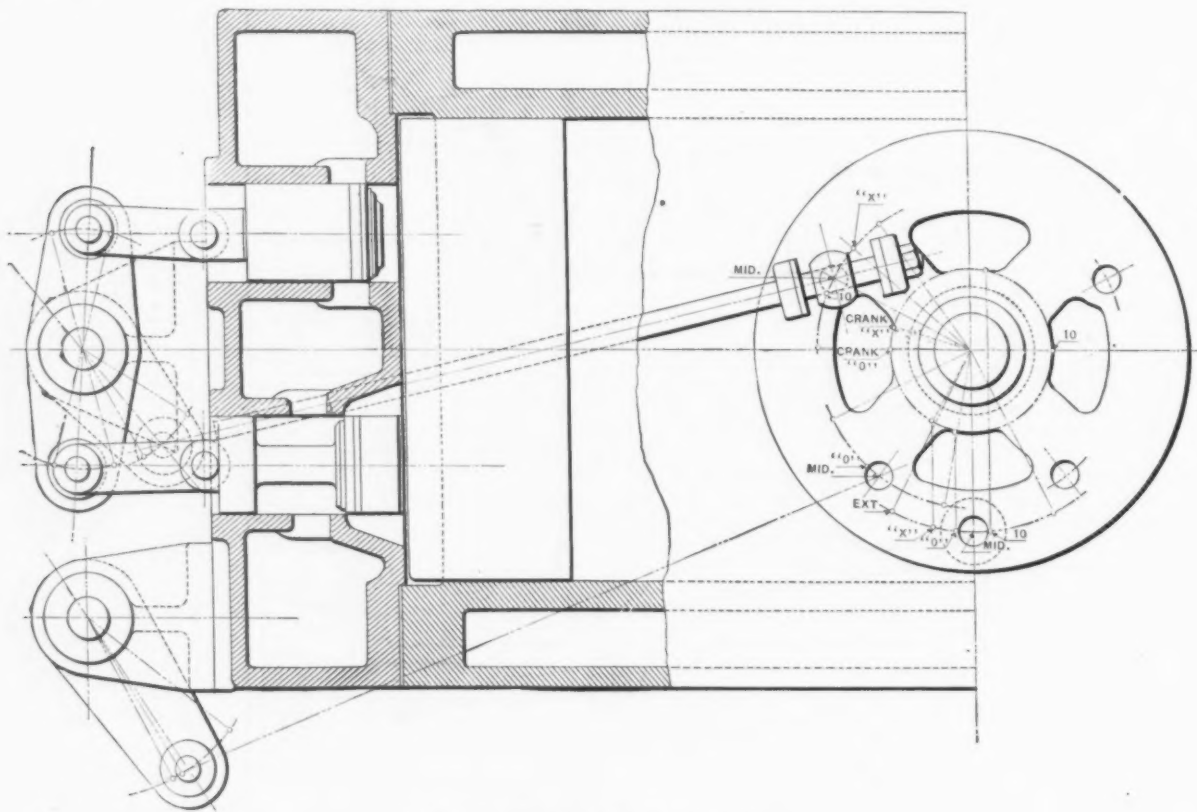


Fig. 3.—Left Hand End of a Compressor.

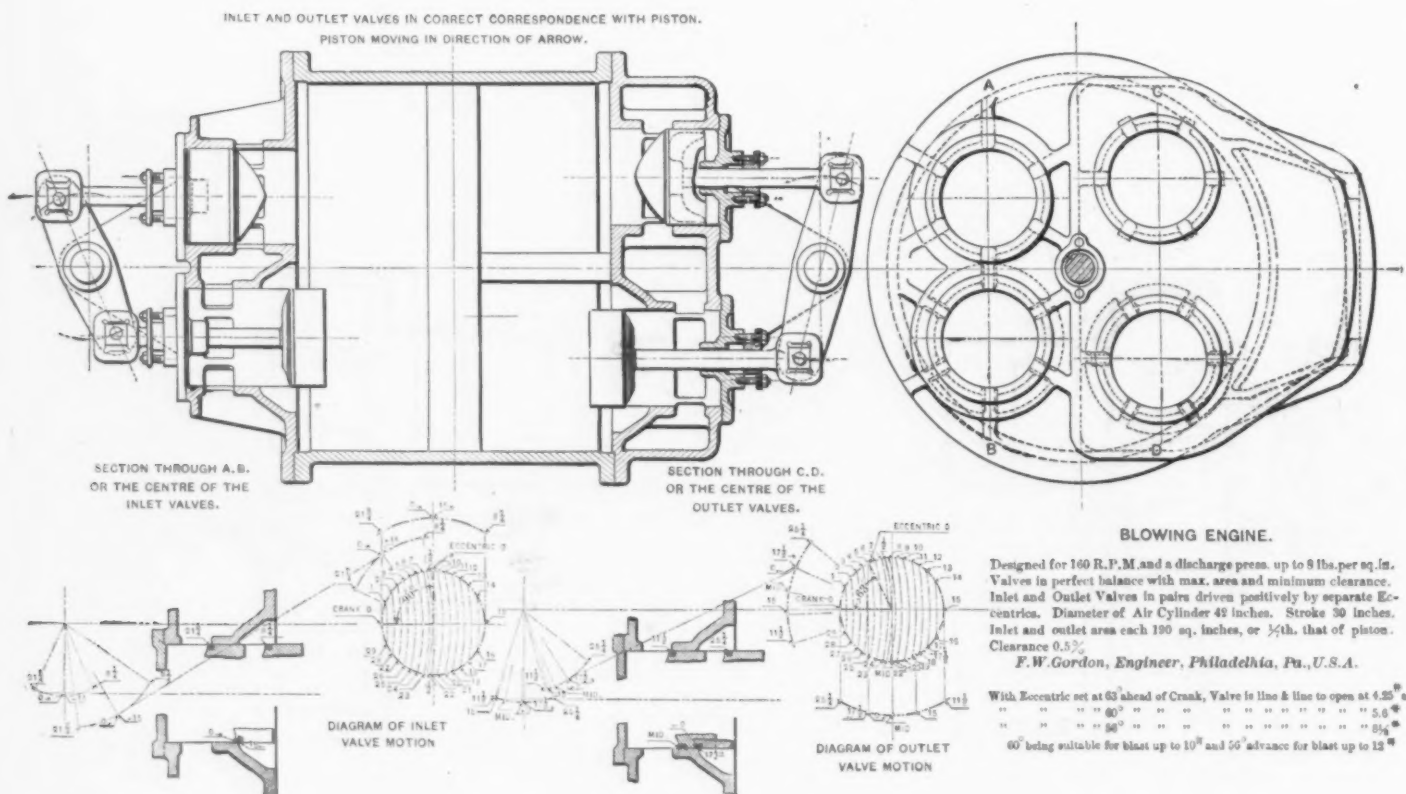


Fig. 4.—Blast Furnace Blowing Cylinder.

NEW SYSTEM OF VALVES FOR STEAM ENGINES.

tion, and maximum of portage are the claims for this system. The illustrations show the adaptability of the system for shaft governed or automatic liberating engines. The details of these need not be dwelt upon, as they would be modified for each particular case. Neither

bore of the main cylinder, the inner flush ends of the valves are parallel with the inside of head. The distance from the cylinder to the port is shorter than usual, reducing the resistance and change of temperature incident to long ports.

When the engine is compound the employment of the valves in the heads is conducive to direct and free passage between the cylinders, so that practically exhaust

the ends of the valves are nearly flush with the inside of the cylinder head, then, as the piston recedes from that end, one of the valves follows the piston and the other re-

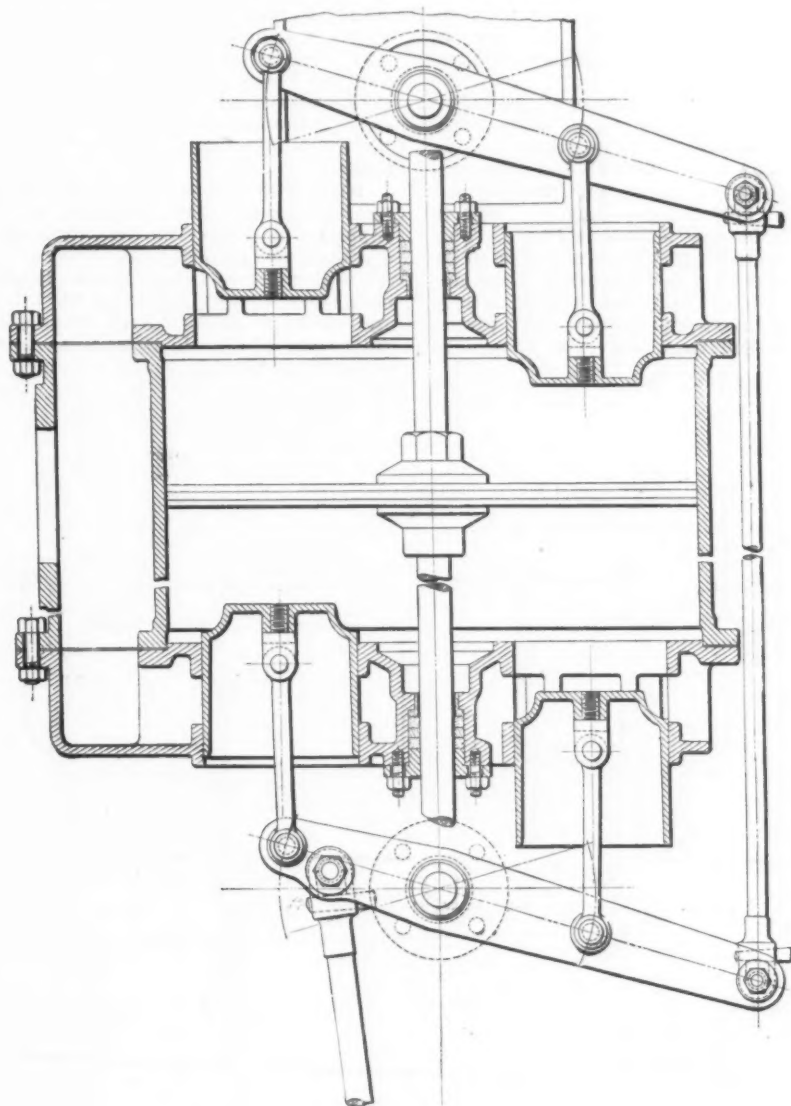


Fig. 5.—Valves on Vertical Piston Blower.

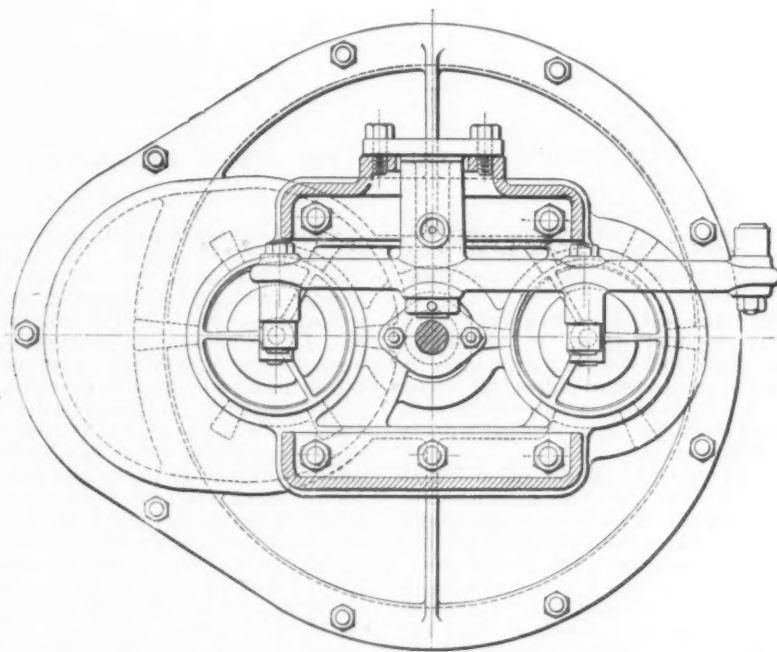


Fig. 6.—Plan Fig. 5.

NEW SYSTEM OF VALVES FOR STEAM ENGINES.

pressure in a high pressure cylinder may be the initial pressure in a low pressure cylinder. When the piston is at dead point, and the valves have the desired lead, and

cedes from it. It will be seen, then, that no amount of increased travel of the valves materially increases the clearance, hence the system is especially adapted to shaft

equipped with valves of this pattern. The author says: "We are gratified to be able to state that at 100 revolutions per minute (the highest speed this machine was operated) the entire system was practically noiseless—one could simply hear something going on. An automatic poppet valve was tested. This valve was provided with a 3-inch cylinder."

The valve face presented to the increasing pressure in the compression cylinder was reduced by the beveled surface of the poppet seat, and better result obtained as to time of opening. The cards are nearly as good as the

induction, which, coupled with small clearance, obtains high volumetric efficiency. The total clearance, including that of the outlet valves referred to, is 34 cubic inches on each end (the piston head clearance being 1.16 inch—) = 0.75 per cent. In compressing to 50 pounds gauge, this volume of air would expand adiabatically to 98 cubic

inches in dropping to atmospheric pressure. $\frac{98 - 34}{154} = 0.42$

inch of stroke required, leaving $\frac{29.58}{30} = 98.6$ per cent. as

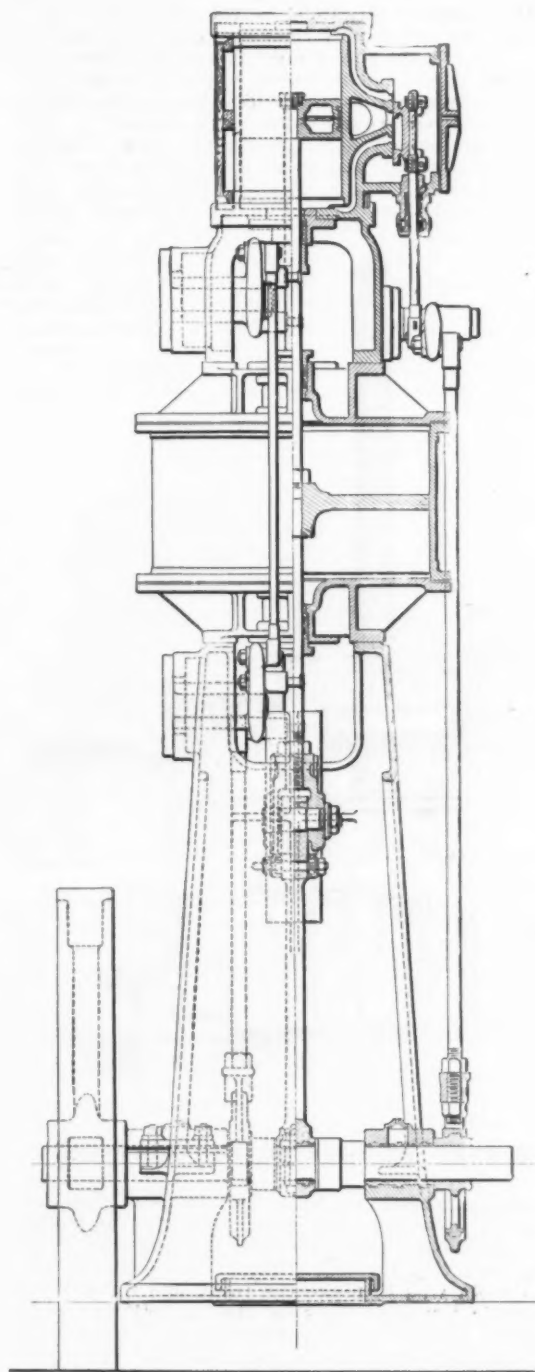


Fig. 8.

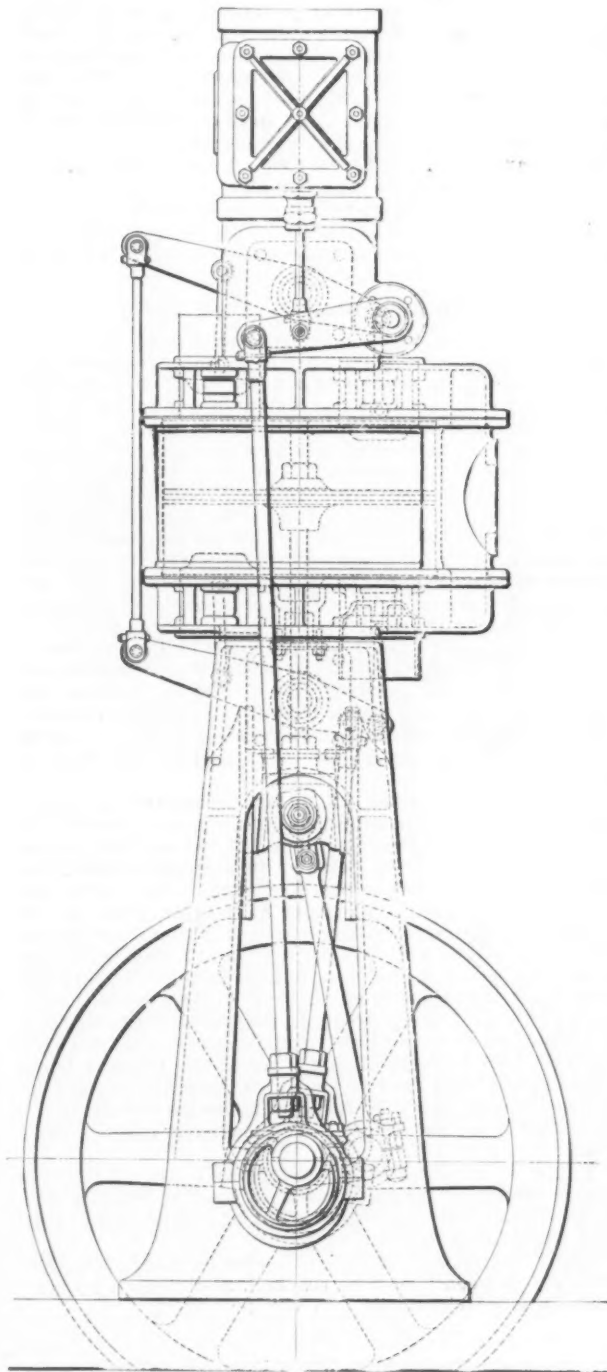


Fig. 9.

Valves on Vertical Piston Blowing Engine.

NEW SYSTEM OF VALVES FOR STEAM ENGINES.

positively closed valve. Springs used to seat ordinary poppet valves are a source of resistance to the outgoing air. The strength of the spring used on this automatic valve was more than neutralized by the introduction of the 3-inch cylinder, and the removal of the pressure therein, causing the valve to open freely, and checking the fluttering common to such valves.

Efficiency.

A compressor can only press forward the weight of air received, and among the most desirable qualities is good

the effective portion of the stroke. If atmospheric pressure and temperature exist in the cylinder at the head of the suction stroke, this will be the volumetric efficiency of the compressor. Up to 60 revolutions per minute the atmospheric line and suction lines on the cards, at the end of the suction stroke, are so nearly coincident that they cannot be seen to differ, while at 100 revolutions per minute the closest scrutiny is required to note a perceptible drop. The cylinder barrel is well water cooled, and, with water below the air temperature, should tend to cool rather than heat the air en-

tering the cylinder, leaving the piston head and cylinder head to heat it somewhat. Dry air, however, is only heated by convection—too slow a process to have much effect on air while it is filling a cylinder; and if the air enters by short and direct unheated passage it may be assumed that compression will commence upon air at atmospheric temperature. At least this compressor may be safely estimated to deliver 97 per cent. of the weight of its piston displacement of the supplied atmosphere, working up to 50 pounds gauge.

Power Required.

From a number of cards taken simultaneously from the steam and air cylinders, with springs of same strength, and then changing the indicators and taking an equal number of cards, averaging the whole, the resistance of the air was found to be 87.91 per cent. of the force expended by the steam—12.09 per cent. is chargeable to friction; possibly 10 per cent. for large compressors would be an ample allowance. If the connections to the reservoir are large, short and well formed, the saving in cooling during compression will complete a compression on the equivalent of adiabatic compression in the cylinder. The cards show from 1 to 2 per cent. more power than this, but the connection to and location of reservoir were not altogether the best.

Light Pressure Blowers—Figs. 5 to 9.

The term "blowers" has become general for compressors, first used to supply air to furnaces, cupolas, &c.—that is, for blast pressures now up to 15 or 20 pounds gauge. A modification of the system of our valves is recommended for pressures up to 4 pounds gauge. There are but two valves in each head, both alike, and always balanced, and are positively driven from the same eccentric. One valve in each head serves as the inlet, the other for the discharge. This is a full stroke machine, though a slight saving over this may be effected in compressors. The chief merit is the simplicity of the valve action, great portage obtainable, and that it can be driven as fast and maintained tight as long as an ordinary steam engine can. While admitting of great portage, the clearance is kept down to less than 1 per cent. for cylinders with a stroke equal the bore, and a more effective displacement obtained than from ordinary blast furnace blowing engines. This type of "piston blower" is adapted to silver smelters, cupolas, pneumatic transmission, &c. A speed of 200 revolutions per minute is well within the limit of this blower.

For higher pressures, which are reasonably constant and seldom over 12 pounds per square inch, a blower as shown in Fig. 4 is recommended. There are four valves in each head—4, *e.*, two pairs as in a steam engine, one pair for inlet the other for discharge. The inlets are driven by an eccentric set about 87 degrees ahead of the crank, the discharge by an eccentric 63 degrees ahead. The latter valves will be line and line to open when the pressure is 6 pounds per square inch in the cylinder; and from what was seen in the action of the automatic discharge valves, if the pressure in discharge chamber were 10 pounds an excellent card would result. This drawing was prepared for blast furnace work, the blowers being driven direct with gas engines at 160 revolutions per minute, and two 42 inch x 30 inch cylinders furnishing 15,000 cubic feet of air per minute. The matter is under advisement.

Steam engines driving compressors are subject to double strains if they are set with lead of compression. To avoid the loss incident to want of compression clearance should disappear.

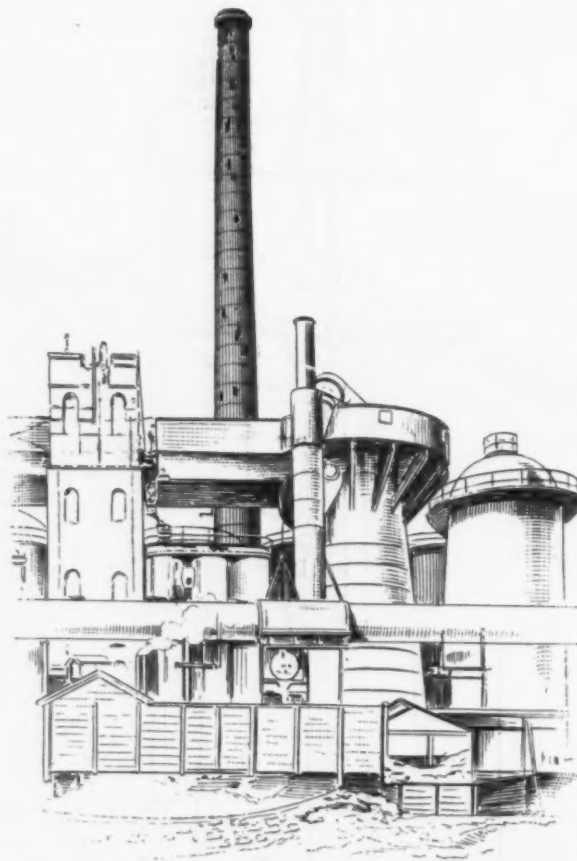
With the system of valves herein outlined, less than half of 1 per cent. may be reached, and though no compression is provided, the loss will be trifling.

Cast Iron Soil Pipe Combination.

We are advised that the consolidation of Cast Iron Soil Pipe interests has been virtually completed. The Central Foundry Company, which is the name under which the new concern is to be known, will have a capital of \$14,000,000, half of which sum will be in preferred shares and half in common stock. Some 34 concerns will be included, embracing practically the entire Cast Iron Soil Pipe capacity of the country with the exception of two large plants, the owners of which, however, will, it is said, act in harmony with the combination. Valuation of the various properties is now going on and when it is completed the concerns will, it is said, be turned over to the new company, who buy them outright. Robert A. Regester, of J. Regester & Sons, Baltimore, Md., is active in the deal, and it is stated that in addition to his own plant, those of the Henry McShane & Co. Company, Bartlett, Hayward & Co. and the Jones Hollow Ware Company of the same city will be included in the combination.

The Trans-Siberian Railway.

Herbert H. D. Peirce, secretary of the United States Embassy at St. Petersburg, who is now in this country on a leave of absence, in a recent interview gave some interesting information regarding the progress of the Trans-Siberian Railway. People outside of Russia hardly realize, says Mr. Peirce, how nearly completed the Trans-Siberian Railway is. I was told recently by Prince Hilkooff, Minister of Ways of Communication, who has charge of this great work, that he expected to make a trip around the world in 40 days during the coming Paris Exposition, going by way of the Trans-Siberian route, and he had the kindness to ask me to accompany him on the trip. Even now the route is almost continuous from Moscow to the Amoor River, and thence to Vladivostok, on the Pacific Coast, with the exception of a comparatively short stretch which has to be covered by post horses. Once open, this marks almost a commercial revolution, giving a highway from Western Europe to the Pacific, and from our Pacific Coast into the Far East and thence to Eastern Europe. The road is so well along that trains are run out of Moscow which



A CHIMNEY PERFORATED BY LIGHTNING.

would astonish even Americans as models of elegance. These trains have not only baths, libraries and other modern equipments, but a complete gymnasium to beguile the long trip through Siberia. The original purpose of Russia was to make the route one for military and strategic purposes, linking the capital and other large centers with the naval rendezvous at Vladivostok. But now commerce and travel over the road have quite overshadowed the strategic purpose, and Russia finds that she has opened a highway which is to be one of the great channels of the world's traffic. In time, possibly, the route will be diverted southward through Chinese Manchuria to permit a terminus at Russia's new and important leasehold at Port Arthur. But for the present Vladivostok continues to be considered its commercial terminus on the Pacific.

A Chimney Struck by Lightning.

Stahl und Eisen prints a reproduction of a photograph taken at the Friedrich-Wilhelms-Hütte at Muelheim a. d. Ruhr of a blast furnace chimney which was struck by lightning, being perforated at 23 places. The accompanying sketch shows the location and character of the large holes, which, it is stated, did not interfere with the draft, since the waste gas from the hot blast stoves was carried off as before. Repairs were made while the furnace continued in blast.

A Novel Vise for Irregular Work.

Some of the most expensive work that a manufacturing engineer has to undertake is the construction of jigs, rigs and chucks for holding irregularly shaped pieces of work for machining, or occasionally for hand work. Where a large number of similar articles has to be made, of course it pays to go to some expense in this direction, but where only a few are required the cost is considerably increased by the outlay on the chucks required. With a view to meeting this difficulty, and removing the necessity of constructing a new set of jigs for every new set of patterns, E. Henry Jones of 53 Clerkenwell road, London, has invented the ingenious vise illustrated by the annexed cuts. As will be seen, says the *Engineer*, the type shown is intended principally for bolting to the table of a drilling machine, but other designs suitable for a lathe chuck and for an ordinary bench vise are in hand. The vise consists of two frames or boxes which slide on a well proportioned rest, and are moved by a right and left hand screw rotated by a handle. Each box is completely filled with a large number of small hexagon mild steel pins the ends of which are reduced so as to leave a shoulder and to act as a guide. On each one there fits a small spiral spring, which, by pressing against the shoulder of the hexagonal part and against a back plate through which the shanks pass, drives the pin forward. On account of their shape the pins all pack together into the box or frame like a honeycomb. In each box there is a clamping plate and screw.

The manner of using the vise is as follows: If it is desired to drill out such a piece as one of the steel tees

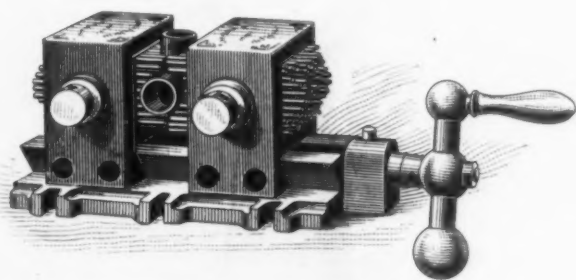


Fig. 1. Jaws Closed.

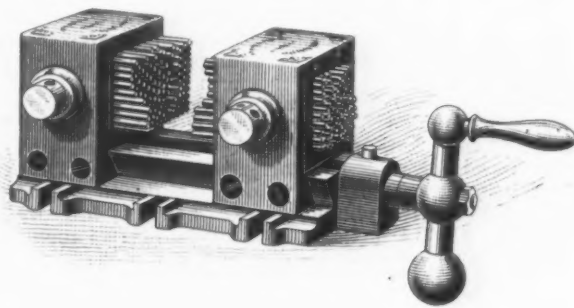


Fig. 2. Jaws Open.

A NOVEL VISE FOR IRREGULAR WORK

or elbows used in bicycle construction, a cleaned up but unmachined casting of one is taken and is driven fairly tight onto a drill or spindle fixed in the drilling machine. The vise is then brought into position under it, the clamping screws loosened, and the handle turned so that the casting is pressed between the jaws. It is evident that an impress of each half of the casting will be left on the flexible faces of the vise, some of the bars projecting further than others, according to the shape of the piece, and if the jaws are then clamped up while the piece is in position a rigid mold will be left, and a jig formed with little trouble and in little time. Further explanation is unnecessary. We have examined one of these vises very carefully and critically, and have no hesitation in recommending it highly, both as a strong and well made tool and one that would prove very useful in engineers' shops. We expected that on account of the large surfaces in contact and the smallness of the springs there would be some trouble in getting the bars to follow the shape of the work. This does not appear to be the case, and as all the bars are quite independent and can be removed instantly when cleaning is necessary, we do not see why the vise should not work just as well in a workshop as it does in a showroom.

At a special meeting of the jobbing foundries of Philadelphia and vicinity at the Manufacturers' Club, under the auspices of the Philadelphia Foundrymen's Association, on Thursday evening, July 6, 1899, the following was unanimously adopted: *Resolved*, That on account of the rapid rise in price of pig iron, scrap iron and other raw material, it is the sense of this meeting that the present price for iron castings is too low; therefore be it *Resolved*, That the price of iron castings be advanced from $\frac{1}{2}$ to 1 cent per pound, to take effect immediately; *Resolved*, That should there be a further rise in pig iron, scrap iron or raw material the price of iron castings shall be advanced at least in proportion.

The Imperial Steel Works of Japan.

We are indebted to T. Wada, general manager of the Imperial Steel Works of Japan, who was recently in this country, for some data on the interesting new plant now in course of construction at Yawatamura, Chikuzen, Japan.

The works occupy a favorable position on a land locked bay, the area acquired being 215 acres, which admits of terracing. It is estimated that when the plant is completed it will require about 240,000 tons annually of iron ore, 67,350 tons of limestone, 375,000 tons of coking coal, 70,000 tons of gas coal, 5175 tons of spiegel and 3858 tons of ferromanganese. The production is expected to be 45,000 tons annually of Bessemer steel and a like amount of open hearth steel. The line of products will be rails of different sections, beams and channels up to 12-inch, tees up to 8-inch, angles up to 6-inch, deck beams up to 12-inch, rounds and squares up to 6-inch, and flats up to 15 $\frac{1}{4}$ -inch width. A line of plates will be made up to 6 inches thick, up to 10 $\frac{1}{4}$ feet wide and weighing up to 6 tons, for naval and army use, and a line of merchant plates and sheets. Besides the works are to produce axles, wheels, car frames, naval forgings, cast steel screw propellers and anchors.

There is to be established a coal washing plant having a capacity of 1200 tons per day and 200 Coppée coke ovens taking 6-ton charges and equipped with two pushers. A series of storage bins for flux and ores and a brick making plant are a part of the equipment. The ores are to be roasted in 20 Westman kilns 33.4 feet high, fired with furnace gas and having a daily capacity of 40 tons. They will be served by two electric hoists.

The blast furnace plant has two 75-foot stacks with 23-foot bosh, with a capacity of 165 tons per day, being equipped with two electric hoists. There are eight Cowper hot blast stoves 98.4 feet high and 19.7 feet in diameter. There are four horizontal cross compound blowing engines with 35.4-inch high pressure, 51.2-inch low pressure steam cylinders, 74.8-inch blowing tubs and 59-inch stroke, running at a speed of 34 revolutions, and delivering blast at a pressure of 10 pounds. A battery of 24 Lancashire boilers, 7.2 feet in diameter and 36 feet long, with a heating surface of 96.5 sq. m. will deliver steam at 8.5 atmospheres. The condensing plant will consist of a closed counter current surface condenser, capable of condensing 1036 pounds of steam per minute. There will be two electric air pumps and two electric pumps for handling the condensed water. A wooden cooling tower is provided, which is 87 feet long, 32 feet wide and 74.8 feet high. The furnace plant is equipped with a brick chimney 262.5 feet high.

In the steel department is a mixer plant consisting of two mixers with a capacity of 160 tons, provided with hydraulic tilting arrangement. Three cupolas with a melting capacity of 200 tons are to be built, backed by an electric hoist and three electric blowers. The Bessemer plant proper consists of two 10-ton Bessemer converters of the American type, with a hydraulic tilting arrangement and a rated capacity of 400 tons per 24 hours. The Bessemer blowing engine is a horizontal cross compound engine, with 43.3-inch high pressure and 66.9-inch low pressure cylinder, 59-inch blowing cylinder and 59-inch stroke. The engine is rated at 1600 horse-power, delivering blast at a pressure of 29.2 pounds per square inch. There are two spiegel cupolas. Casting is done with the aid of three 15-ton ladles, handled by a 20-ton electric traveling crane, the ingot molds being moved by a hydraulic car pusher.

The open hearth plant is to have four 25-ton furnaces with four air reversing valves and four gas reversing valves, 12 gas producers backed with two electric fans.

A Wellman charging machine with a maximum lifting power of $1\frac{1}{2}$ tons is to be provided. The casting appliances include a 50-ton electric traveling crane, and two 30-ton casting ladles. There will be 10 electric cold saws, two electric lathes and three small jib cranes, six mold drying ovens and two annealing furnaces.

In the stripper house there will be a hydraulic stripper of the American type, and two hydraulic mold pushers. Seven pit reheating furnaces backed by producers will be served by a 3-ton electric traveling crane. In the blooming mill there is one two-high reversing train with 43.3-inch rolls, 110.2 inches wide, equipped with ingot tipper, hydraulic manipulator and live rolls driven by electric power. The blooming mill engine, of the horizontal type, will have steam cylinders of 47.2-inch diameter and 51.2-inch stroke, and is rated at 4000 horse-power. For handling rolls there will be a 25-ton hand gantry crane. The ingot shear is to cut hot ingots up to 12 inches square, being of the steam-hydraulic type. The rail mill is a two-high reversing train with three stands, the rolls being 30.7 inches in diameter and 7.22 feet long. They are served by electric power roller tables, and have a 10-ton electric traveling crane. The rail mill engine is of the horizontal three-cylinder type with 43.3 inch steam cylinder and 47.2-inch stroke, and a rated horse-power of 5800. The hot bed will be 130 feet long and 100 feet wide, while there are in the finishing department four double straightening machines and 16 electric drills.

A two-high reversing engine with three stands of 25.6-inch rolls backed by one heating furnace is used for bars and shapes. It is operated by a horizontal three-cylinder engine with 39.4-inch steam cylinders and 39.4-inch stroke and a rated power of 5800 horse-power.

Another bar train with two furnaces is a three-high with four stands and 17.7-inch rolls driven by a horizontal tandem compound engine, whose high pressure cylinder is 27.5-inch, whose low pressure cylinder is 39.4-inch, with a stroke of 39.4 inch and a rated indicated horse-power of 630. It is equipped with a 32-ton fly wheel.

Another smaller bar train backed by two heating furnaces is divided into two sets, a three-high roughing set, 17.7-inch rolls, and a double two-high finishing set of five stands of rolls 11.8 inches in diameter. This train is driven by a horizontal tandem compound engine with a high pressure cylinder of 25.6 inches, a low pressure cylinder of 35.4 inches and a stroke of 39.4 inches, the fly wheel weighing 26 tons.

There is one two-high sheet train with 25.6-inch rolls and a three-high plate mill with 26.6-inch rolls, 5.9 feet wide, driven by a horizontal tandem compound engine with 28.5-inch high pressure cylinder and 41.3-inch low pressure cylinder and 49.2-inch stroke. It has an indicated horse-power of 900 and a fly wheel of 40 tons. The medium and large plate mill plant is backed by six soaking pits and two reheating furnaces. It contains one medium three-high plate mill with 31.5-inch rolls, 7.2 feet wide, and a large two-high reversing plate mill with 39.4-inch rolls 15.7 inches wide. The engine driving the former is a horizontal tandem compound engine with 28.5-inch high pressure cylinder, 41.3-inch low pressure cylinder and 49.2-inch stroke, with fly wheel of 40 tons. The large plate mill engine is a horizontal twin cylinder engine having 42-inch cylinders with 51.2-inch stroke and an indicated horse-power of 3500. There is an equipment of a 25-ton hand gantry crane for roll changing, two electric plate shears and one electric scrap shear.

There is a central pumping station with an open counter current condenser, two electric air pumps, two electric pumps for condensed water, two pumps for lifting sea water to the blast furnace condensing plant, and a 200 horse-power engine for driving these pumps.

There are two horizontal cross compound hydraulic accumulator pumps, two accumulators, a Linde electric ice making plant. There is a central electric station with two inner pole direct current dynamos of 250 volts and 280 kilowatts, driven by a vertical compound engine rated at 300 horse-power. There is one inner pole direct current dynamo driven by a vertical compound engine rated at 300 horse-power, 120 electric accumulators, a rotary transformer and a direct current motor combined with an auxiliary generator. In the roll shop there are a number of lathes and other tools driven by electric power. An iron foundry is provided, the area being connected by a 20-ton electric traveling crane, a 5-ton electric traveling crane, one 3-ton and one 1-ton hand traveling crane. Two electric blowers, six drying ovens, two cupolas backed with electric hoist, a brass melting shop and a pattern shop with its equipment.

There is a forging shop with a 350-ton steam-hydraulic forging press, a laboratory and 50-ton testing machine, a fire brick plant with two ovens and two electrically driven brick presses.

An addition, 40 x 40 feet, is being made to the Humbert plant of the American Tin Plate Company, at South

Connellsville, Pa., to accommodate a new machine shop, and a new blacksmith shop is also to be built. Several additions and improvements have been made lately at this plant, including the installation of 5 new pickling cradles of an improved type and three new pickling tanks, to accommodate which an extension was made to the pickling department.

Few Railroad Failures Are Recorded.

The first half of 1899 shows a smaller number of railways placed in the hands of receivers than any six months since railway insolvencies began. Only one important road confessed bankruptcy in that period, the four others being small local enterprises, two belonging to private corporations. The following statement, compiled by the *Railway Age*, shows roads placed in receivers' hands from January 1 to June 30, 1899:

Roads.	Miles.	Bonded debt.	Capital stock.
Alexander & Rich Mountain, Va.....	23	\$50,000	\$75,000
Kansas City, Pittsburgh & Gulf.....	782	22,000,000	20,925,000
Tacoma & Columbia River.....	15	250,000	3,000,000
Licking Valley, 4-foot gauge.....	12	30,000	11,000
Silverton, 3 feet.....	20	425,000	350,000
Totals, five roads.....	852	\$22,755,000	\$24,361,000
Total bonds and stock.....			\$47,116,000

The collapse of the Kansas City, Pittsburgh & Gulf within 19 months after the completion of its line from Kansas City to the Gulf of Mexico does not indicate hard times. From the start it has been regarded as a desperate enterprise. While the magnitude of this one failure



THE CRESCENT EMERY GRINDER.

has made the total mileage and capital for the six months larger than last year, the number of lines is notably smaller. Comparison with previous years shows a great and nearly continuous decrease.

The Crescent Emery Grinder.

The emery grinding and polishing machine built by J. C. Born & Bros., of Belleville, Ill., is designed for two wheels $2\frac{1}{2}$ x 16 inches. The spindle is 36 inches long and $1\frac{1}{2}$ inches diameter in the bearings, which are 8 inches long and are dust proof. The spindle is $1\frac{1}{4}$ inches diameter between the flanges, which are $5\frac{1}{2}$ inches in diameter. The distance between the wheels is 24 inches and from the floor to the center of the spindle is 33 inches. The base is large and the column very heavy, thereby making the machine unusually steady in operation.

A New Sheet Zinc Mill.

The Fairmount Zinc Company, Fairmount, Ind., which is about 50 miles north of Indianapolis, have for some time been manufacturing spelter. The plant is modern and the fuel used is natural gas. Their supply of gas is ample, being sufficient to operate a works several times as large. Gaseous fuel not only enables them to get a uniform heat at all times, but the resulting metal is purer and much more uniform in quality than if smelted with coal or coke. As they own their gas supply they are at no expense for fuel, which is usually one of the largest items of cost in the production and manufacture of zinc. They are now adding buildings and machinery to increase their output and to roll a large part of it into sheet zinc, also to make sulphuric acid and the fertilizer known as acid phosphate. For the purpose of securing ample capital they are increasing their capital stock to \$250,000, some of which they offer for sale.

Legal Standing of So-Called "Trusts."

At the annual meeting of the Indiana State Bar Association in Indianapolis on the 7th inst. John T. Dye, a prominent lawyer, politically a Democrat, interpreted the rights of industrial consolidations. He held that a "trust," no matter how much a monopoly, organized in a State could not be legislated against in another State, and that no combination of capital in restraint of trade was a subject for legislation unless the combination was an agreed conspiracy for the purpose of destroying competition. He held that the manufacturing business is not amenable to Congressional legislation, and then summarized his points for the lawyers as follows:

The business of manufacturing is not embraced in interstate commerce and Congress has no power to control or restrain combinations in restraint of trade in the business of manufacturing.

Congress has no power to restrain monopoly as such, unless it be a monopoly of commerce among the States or with foreign nations.

Contracts to buy and sell or exchange goods to be transported among the several States, the transportation and its instrumentalities, and articles bought, sold or exchanged in the business of such transit among the States and in the way of transfer, may be regulated, because they form a part of interstate trade or commerce.

The State has unquestionable power within its boundaries to make void all contracts, combinations or conspiracies in restraint of domestic trade or commerce and to impose penalties on parties making such contracts and entering into such combinations. But where there is no combination, conspiracy or agreement to restrain trade or commerce it cannot deprive any person of his liberty or property by restraining him from pursuing a lawful avocation or from making such contracts in the acquisition, use and disposition of his property as may be necessary to successfully carry on any such pursuit.

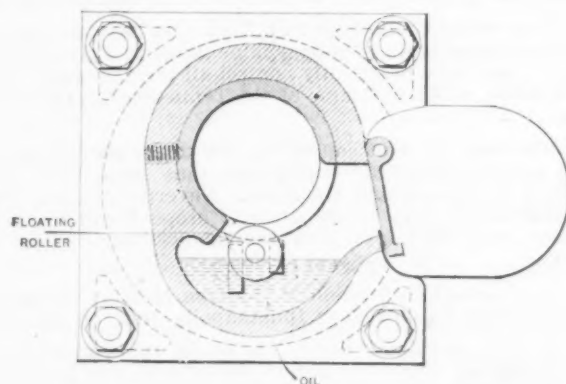
The mere fact that large aggregations of capital in one kind of business inevitably tend to prevent competition does not authorize the State to prevent them where there is no contract or combination to restrain trade. Nor can it prevent or control the action of domestic corporations acting within the scope and limits of their corporate authority in extending their business and increasing their capital, unless by revoking their charters, and this cannot be done where such power of revocation is not reserved in the grant.

Nor can it prevent the purchaser of property in another State from a corporation organized under the laws of another State from importing such property into the State of his residence.

The State must preserve peace and enforce order to protect the liberty of all, and it must regulate the acts and contracts of all persons within its dominion, including combinations of capital and labor within the limitations imposed by the organic law, but no regulations can be made which will destroy or impair the historic rights of liberty and property upon which our present social order is based.

Self Lubricating Axle Box.

In a description of the works of Joseph Adamson & Co., at Hyde, the *London Engineer* presents the accom-

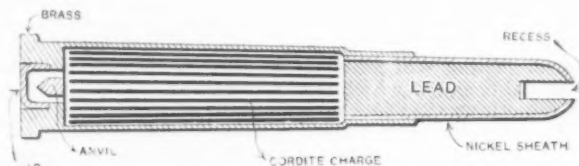


SELF LUBRICATING AXLE BOX.

panying engraving of a self lubricating axle box. From the drawing it will be seen that the journal is provided with an oil reservoir, in which is a floating roller for distributing the oil. This axle box is on an electric traveling crane designed by the company. It has a span of 62 feet and will bear a working load of 50 tons.

The Peace Conference and the Dum-Dum Bullet.

The *London Engineer* states that there have been statements in the daily papers to the effect that the Dum-dum bullet has been objected to at the Peace Conference. This bullet has been defended, but we think we can satisfy our readers that it would be desirable to let it go. The 0.3-inch bullet is very liable to pass through the limbs and non-vital parts of men without seriously disturbing them. We have repeatedly quoted the pitman at Lord Masham's pits, who had been shot through the thigh with one of these bullets, with the result that it caused him so little inconvenience that it was only some hours afterward that it occurred to him to examine the cause of a rather uncomfortable sensation which he detected in his thigh. With this example before us we cannot wonder at complaints of the power-



THE DUM-DUM BULLET.

lessness of bullets of this caliber on service; a man would be indeed a poor creature who was stopped in action by such a bullet. It became imperative to make some change to give our soldiers confidence in their fire, as well as to produce actual effect on the enemy. We need not say that the device for killing big game with a small bullet—namely, the insertion of explosive in the head, of which the Lee-Metford furnishes the standing example—was out of the question, even had we not joined in condemning explosive bullets in the Geneva Convention. We had for many years had, however, in the service the Boxer bullet for the Snider converted rifle, which had a hollow in its head, which caused it to spread on impact. The hollow had been devised to distribute the weight and cause the bullet to shoot better than one with a solid head which preceded it. The effect of flattening out wide on impact was, however, soon apparent, and it not unnaturally suggested itself as the means of making a very small bullet do duty for one of larger diameter. It should be made clear, moreover, that it is not only the smallness of the bore that causes the bullet to do so little harm as it does, for bullets striking at a high velocity under some conditions spread; but the result was partially due to the nickel case holding the lead in shape. In the case of the Dum-dum bullet the nickel is removed from the front end or bullet point, with the result that the bullet "mushrooms" and has the stopping power required. It is said, however, that the nickel sheath splits open and that pieces of metal fly, so that it has been pronounced by an expert to be a cruel bullet. An alternative device was brought into play in the Royal Laboratory. This consists in punching a small cylindrical hollow in the bullet's head, pressing the nickel case into it. On impact this bullet is said to spread to some extent without any metal being detached. It is questionable if the shock and stopping power are as great as might reasonably be desired; but perhaps they might be slightly increased. Be this as it may, we think that this is the bullet to adopt in preference to the Dum-dum pattern. All the chief Powers have small bore rifles, and all are liable, in these days of extension of colonial possessions, to become involved in warfare with more or less savage races. England may doubtless come more into contact with them than others; but we hope that her treatment of them is also better rather than worse, and it hardly seems right to plead the need of her using a more cruel bullet than others. We think, then, that the plea for the Dum-dum bullet cannot be maintained, though, perhaps, the Royal Laboratory pattern hereafter dealt with may be advocated and brought in. Still, whatever may come in, we cannot think that England can plead for a more destructive bullet than other Powers. She ought, indeed, to be ashamed of any wish to do so. All in a greater or less degree have the same needs, and are likely to fight each other, besides savage adversaries, in all parts of the world, and all must be content to use the same bullets.

The engraving herewith shows the bullet in the laboratory—Mark IV pattern cartridge, containing a cordite charge. Mark III bullet had a hollow in the head and a nickel cylinder inserted to line it. This spread very little. Mark IV, as may be seen in the figure, has a hollow in the head, but the nickel sheath ends on a lip at the entrance. There is a small disk of nickel forced

down to the bottom. This bullet, on impact through moist substances, such as damp clay or a living body, spreads slightly into a sort of rounded knob at the end, but the nickel cover prevents any flying or separation of fragments. Through substances such as dry wood it does not spread, but cuts its way in a clear hole. It is reported, however, that a resolution has been passed at the conference prohibiting the use of bullets covered with a hard outer case, unless the case covers the core entirely and is free from incisions. This resolution was carried by 18 votes against 3. This resolution, it will be seen, condemns the Dum-dum bullets; in fact, it seems framed almost for that purpose. It condemns the laboratory bullet—Mark IV—shown in the drawing, and it may be questioned if it does not even condemn the Mark III bullet by the expression "free from incisions," seeing that the nickel lining to the cylindrical hollow is made separate and inserted. If this view is correct it will be necessary to devise a bullet with a slightly different form of head—perhaps a rather longer one with a larger hollow and thinner walls, such as would enable it to be punched in such a way that the nickel sheath would follow the lead and accommodate itself to its form. There will be some trouble in arriving at a bullet of this shape which carries straight. What is needed is something that sets up enough to give shock on impact without splitting. There is nothing inhumane in this. It would be rather inhumane to send our infantry to fight with bullets which would have generally no immediate effect on striking and very little afterward. Without some provision for setting up, we question if the small bores would not eventually be discontinued.

History repeats itself. In the twelfth century, we think, the Pope laid it down that crossbows ought only to be used against infidels. Something of the kind took place afterward with reference to fauchards, and now in the nineteenth century we find the same line urged with regard to the Dum-dum bullet. Unfortunately, any comparison is rather in favor of our forefathers. What the Pope expected would be the effect on the infidel we can hardly say. Physically, at all events, he would be hit hard; but would the Pope look also for moral results? Would the infidel be impressed with the fact that Christians were too gentle toward each other to use crossbows, and might he be inclined to join their ranks to avoid such hard blows? Be this as it may, we do not hear of the humiliating plea being then made that civilized troops do not charge home like savages, that the laws of their game lay it down that any man that is hit, however slightly, is put out of action and is to stop, and hence that England, who deals more with savages, who do not observe the laws of the game, than Continental Powers, must employ bullets that compel men to stop, bullets that not only spread, but to some extent break up in entering a human body. We are glad to find that Lord Lansdowne, at all events, rejects the idea of England using one bullet for savages and one for civilized troops. In this he follows the example of Richard the First, although we fear Richard's motive was simply the desire to use any weapon that answered his purpose under any circumstances. Certainly he introduced the crossbow into European warfare, and was himself eventually killed by a crossbow bolt. We hope that Lord Lansdowne, while resembling Richard in using the same weapon universally, will differ from him in throwing out the questionable one, instead of retaining it, unlikely as it may be that he might eventually be shot with a Dum-dum bullet. Some authorities concur with us, observing, by the way, that the Dum-dum bullet does not carry straight, which appears to influence their decision. Humane straight shooting is preferred only by such authorities to a more cruel bullet when the latter is less likely to hit. Straight or erratic, however, as the flight of the Dum-dum bullet may be, we think that it is doomed.

But it must not be forgotten that the savage tribes with which we have to contend are in no wise particular as to the kind of bullets which they use.

THE WEEK.

A serious invasion of grasshoppers is reported from Nebraska and it is feared that the crops of the State will suffer in consequence. The species of grasshopper now appearing is the same as that which devastated Kansas and Colorado ten years ago.

London dispatches report that the International Peace Conference at The Hague will adjourn at the end of July to reassemble next spring.

The Portuguese Parliament has ratified the new commercial convention between the United States and Portugal. The convention is under section 3 of the Dingley act, and is a tariff "arrangement" instead of a treaty. As such, it goes into effect without having to

be ratified by the United States Senate, and the only step remaining to put it in operation is a proclamation by the President.

Admiral Cervera and the other commanders of the Spanish fleet destroyed a year ago at the battle of Santiago, whose conduct has been the subject of inquiry by special court-martial, have been acquitted and formally liberated.

The Volta Electrical Exposition, in progress at Como, Italy, including many relics of Volta and a valuable collection of scientific records, was entirely destroyed by fire on Saturday, the disaster being due to defective electric wires.

Work is proceeding rapidly on the new battle ship "Maine," whose keel was laid at the Cramp shipyard, in Philadelphia, on February 15, last—the first anniversary of the destruction of the original "Maine" in Havana harbor. The frames of the ship are already in position to the height of the armor shelf.

To accommodate the increasing trade between Philadelphia and London, the Philadelphia Transatlantic Line has ordered four large freight steamers to be built in England. Each steamer will have a carrying capacity of 7500 tons dead weight.

It is said that the smelter interests in Colorado are not anxious to bring about the end of the strike until the constitutionality of the eight-hour law of the State is passed upon by the courts.

Pittsburgh parties are figuring on a contract for the sewerage of the city of Merida, Yucatan, a work which, it is estimated, will cost about \$3,000,000. The engineering feature of the work presents considerable difficulty, as the city is 30 miles from the sea, and the intervening country is mostly rock. It is almost perfectly flat, the gradient being only one foot in the mile.

The fire loss of the United States and Canada for the first half of 1899, as compiled by the New York *Journal of Commerce*, aggregated \$65,699,750, or about \$7,460,000 more than for the first half of 1898, and \$7,760,000 greater than for the corresponding period of 1897. The loss for the month of June was unusually light, being only \$6,714,850; otherwise the comparison for the half year would have been still more unsatisfactory.

An interesting financial episode is the capture by Chicago bankers of an issue of \$10,025,000 worth of New York City 3½ per cent. bonds, in competition with New York firms. The price paid is 109.45. Farson, Leach & Co. were the successful bidders. The same house placed \$2,000,000 of the last New York City bond issue among Chicago capitalists.

According to United States Consul Fowler, the sudden rise in copper is responsible for extraordinary difficulties now confronting the Chinese currency system. The result has been that the "cash," or subsidiary Chinese coin, is now worth much more than its face value in silver. In fact, the Chinese Government is paying 1.35 taels for the copper and zinc out of which is minted enough cash to make one tael in the aggregate.

The aggregate of bank clearings in the United States for the six months ended June 30, 1899, was the heaviest ever known, amounting to \$48,073,459,121, a gain of 46 per cent. over the first half of 1898, of 94 per cent. over 1897, of 117 per cent. over 1896, and of 57.5 per cent. over 1892, the last previous year of active business prosperity.

Lewisohn Brothers of New York City have purchased another large tract of copper mine lands in Polk County, Tenn., and now practically control all the Tennessee copper fields, under the name of the Tennessee Copper Company.

The high price of copper has led to the postponement of various electrical enterprises that have been projected in France and Germany. Nevertheless, the consumption of copper throughout Europe continues very heavy, and the supply this year shows but a slight increase.

The annual convention of the Iron Molders' Union of North America opened at Indianapolis, Ind., on Monday.

A very decided "boom" is on in the Connellsville (Pa.) region, where the shipments of coke are phenomenal. The region musters 18,711 coke ovens, of which number 17,555 are reported as active and in full blast. The production of coke for last week was more than 182,000 tons.

Natural gas was struck this week at Chanute, Kan., having a rock pressure estimated at nearly 500 pounds.

The zinc mines of the Missouri-Kansas district resumed operations on Monday after a two weeks' shut down. The smelters have practically cleared up all the ore in the district.

The Iron Age.

New York, Thursday, July 13, 1899.

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JOHN S. KING,	- - - - -	BUSINESS MANAGER.

Are Present Prices a Criterion?

We cannot help observing that sentiment in the iron trade has undergone an almost revolutionary change during the past few months, and that there is some danger that an unwarranted optimism is taking the place of the pessimism which was almost universal in the fall of 1898. We pointed out again and again in those darker days that the great producing region, the Central West, was strained up to full capacity, that little reserve was available there, and that what producing plants were idle in other sections would not be called into play over night. We must confess that we did not expect that it would take as long a time to bring them into line as it has. These delays have been responsible to a considerable degree for the extraordinary rise in prices which we have witnessed, and they in their turn have brought about preparations for resumption far beyond anything dreamed of three months since. It is a very unhealthy situation which revives plants which were not dismantled simply because the wrecker could not see any profit in the operation. For the good of the country and for the best interests of the iron trade this is to be deplored. To the extent to which the boom has led to plans for the enlargement and strengthening of modern plants the situation is sound because our normal home consumption is larger and because it puts us into better shape to handle an export business in the future. It is money well invested, but the capital that is being sunk now in patching up old works, utterly incapable of resisting competition in normal times, is largely wasted. If it merely meant a loss sustained by a few adventurous men the matter would not be serious, but every manufacturer knows how much injury is inflicted upon not alone the weak but also upon the strong during the death struggles of such competitors.

The majority in the industry are deeply interested in having prices well maintained, because material contracted for at much lower prices is promptly called for, leaving a good profit to the seller. The order books are full for month after month to come, at constantly higher figures. Brilliant returns are in sight and yet there is underlying fear that any upset may see them shrink away. Many in the trade seem inclined, therefore, to express very optimistic views. Herein lies the danger of keeping up the market too high.

To a very large extent present values may be stated to be artificial and misleading. They represent small transactions for immediate delivery, the small overflow of demand which makes the market, but really does not fairly reflect the prices at which the overwhelmingly large percentage of the tonnage is being delivered or is to be supplied for many months to come. For instance, steel billets are being quoted at \$32 to \$34. Yet material is still being shipped for which \$16 is to be paid. We have reason to believe that none of the large works have really important contracts on their

books above \$25 per ton. To a certain degree the same is true of the whole line of crude and manufactured products.

The sentimental effect of what might be called special prices may become a dangerous factor in many directions. Let us suppose that the great steel companies decide to accept \$25 for billets for delivery during the first half of 1900. That would look like a tremendous decline, and yet it would in reality be taking business at a price probably better than the average of the second half of the current year. It would be an exceedingly profitable price in spite of increased costs, and yet the general public and many in the trade would consider such an apparent decline, although a real slight advance, as a very clear proof of serious demoralization of the markets.

Except in those branches which, like beams, have been kept below the general level of prices by an association, there has been very little placing of contracts beyond the current year. Rolling mills and steel works are not in a position to judge even approximately what prices to name, nor are buyers willing to tie themselves down when the chances seem to be in their favor in any talk of carrying boom prices into 1900.

It is altogether impossible to judge what will be the effect of present prices upon the demand. They do not now and will not this year affect the great majority of consumers. The present nominal price of steel rails of \$30 to \$32 has nothing whatever to do with the current consumption, since the railroads are putting down \$16, \$17 and \$18 rails and are getting very good prices for the old material they take up. How many requisitions will be pigeonholed if the rail makers attempt to demand anything like \$30?

The doubling of prices of an article like iron must affect its consumption as soon as the high prices become effective, which, we repeat, they are not now, nor will they be this year. We believe that consumption promises to continue to be enormous and that the well built, well located plants in the United States will make a good deal of money in 1900, as they are now doing. But we do not believe that the big business for 1900 will start at the present level, particularly because every day is adding to the supply in all branches.

The concerns which cannot run on a materially lower basis must pull out before 1900, or those interested in them will drop all the profits which they will make during the coming six months, and more too.

A number of considerations are urged in favor of the plea that present quotations are safe for contracts for 1900 delivery, or, in other words, that prices later on will be even higher. Chief among these is that the iron famine is not local with us, but that it is universal, and that we really have been the last to fall into line. It is pointed out that German furnaces and steel works are sold up for the whole of next year, and that English makers are exceedingly busy. As an indication of the shortage we need only note that Belgian and German consumers and dealers have been advertising for large blocks of pig iron in *The Iron Age* during recent weeks. But it must not be forgotten that the boom in Germany has been going on for a long time, and that there have been repeated ominous warnings in financial circles.

The point is made that there has been practically no speculation in iron during the present boom. It is true that there has been very little in the product, but no one will deny that there has been a good deal

of it in the securities of old and new producers. In former booms that was not possible because there were no dealings of any consequence in iron and steel stocks. It is an open question whether speculative holdings of pig iron are as serious or as permanent a source of danger as are speculative holdings of securities, good, bad or indifferent. So far as the good stocks are concerned, it may be stated that the general public has as yet no conception of their permanent value, not do many in the trade realize how enormously they are strengthening their position for the squally days that may come in three or four years.

Another point which is brought forward is that the trade is steadily acquiring a momentum which will carry it over the usually dull winter months, and that the closing months of 1899 and the opening months of 1900 will duplicate the experience of the like period of 1898-1899. In other words, the large concerns are still falling behind in deliveries, and will carry a good deal of work required for 1899 into the year 1900. Besides, as the winter approaches stoppages for repairs will become more and more imperative. The great Central West has now been running without a breathing spell for over a year.

It is true, too, that next year will bring higher costs. The lake ores sold at low figures before any one realized what was before us. In 1900 the mine owners will ask and get a share of the profits. Labor is now on a higher basis, and will remain so for a long time to come. Transportation is dearer, with little prospect of any reaction in rates.

All these considerations tell against any sudden collapse which those speak of who dwell upon the experience of former booms. But a return to more normal yet very remunerative prices for material to be delivered in 1900 is quite another matter. When it does come, it should not be regarded as a calamity by producers, or considered as an evidence of coming disaster by consumers, because it would be decidedly beneficial to both.

The Failure of Mildred.

Another farmers' co-operative manufacturing scheme has come to grief. Some five years since a company, organized exclusively among the members of the National Grange of Patrons of Industry, purchased a square mile of land near Springfield, Ill., and laid out the town of Mildred, at which they proposed to establish an immense plant to manufacture agricultural implements. They expected to turn out all kinds of implements and supply them to members of their society at prices much under those charged by regular manufacturers. The town itself was to be a model municipality, rivaling Pullman. The promoters were enthusiastic and succeeded in imparting their enthusiasm to many others, and the coming town of Mildred acquired no little fame in certain circles. In the course of time a beginning was made in the erection of factory buildings and some machinery was installed. According to apparently authentic reports a few wheelbarrows, wagon beds and stepladders were turned out, but no effort was made to attack anything in the nature of farm machinery. Probably the sanguine promoters found that manufacturing was a somewhat complicated business, involving considerably more than the equipment of a factory and the purchase of raw materials. Last week the curtain was rung down in the foreclosure of a mortgage on the property which was held by a hard hearted Chicago capitalist.

Meanwhile the men who have made it their special business to manufacture farm implements have been doing a larger trade than ever, and with few exceptions have greatly increased their facilities.

National Bankruptcy Convention.

A call has been issued for a limited convention to meet in Chicago on the 25th inst. for the purpose of discussing the national bankruptcy law. The object of the convention is evidently to strengthen the law and if possible make it a permanent feature of domestic commercial relations. This appears from the fact that the call is issued by official referees in bankruptcy, requesting all the referees of the United States to meet in convention, with "such others interested in its objects as shall be invited to participate by the committee on invitations." The objects of the convention, as set forth in the call, are: (1) To listen to addresses and special papers prepared by those experienced in bankruptcy litigation; (2) to discuss topics pertinent to the law of bankruptcy and consider conflicting decisions; (3) to promote a uniform method of procedure before the referees in the several districts; (4) to recommend to the committees in Congress such amendments to the law as will promote its objects and expedite its administration, and (5) to suggest to the judges such changes in the rules as experience has shown to be desirable.

The organizers of the convention are guarding with scrupulous care against a possible invasion by enemies of the law. They provide in the call that "for the purpose of recording the vote of the convention upon matters submitted to it it shall be limited to duly appointed referees." This draws the line sharply against non-officials, even if they may be present by invitation and take part in the deliberations. It is well known that great hostility to the law exists among those who manage heavy business interests involving relations with large numbers of customers. Wholesale merchants are particularly caustic in their criticisms of the loophole which it provides for the unscrupulous, who secure large quantities of goods on credit, sell at a sacrifice and have little to divide among creditors when a levy is made upon their assets, but are purged by passing through the present legal forms of bankruptcy and put in a position to resume business. If the convention should be open to business men the whole fabric of the bankruptcy law would undoubtedly be vigorously attacked, and it might be impossible to prevent condemnatory resolutions from being adopted. This will be completely avoided by the plan of organization adopted for the convention.

Being composed of friends and supporters of the law, the convention will very probably recommend such additional legislation as may make its administration more acceptable to business men having extensive systems of credit spreading over the country. As the law now stands it is said to be easy for an applicant in bankruptcy proceedings to conceal his assets and leave no means for the court to levy on. To cure this weakness in the law it is proposed to give the referees more power, so that the courts may be satisfied that an insolvent has complied with all conditions before he is granted relief from his debts. This and other matters of an amendatory character are to be embodied in resolutions to be submitted to Congress.

As those who are absolutely opposed to the bankruptcy law will have no standing in this convention,

they will have to devise some plan of their own if they wish to make a demonstration against it.

A Gas Producer Decision.

Judge Acheson at Pittsburgh has rendered a decision in the case of A. B. Duff, trustee, against the Davis Glass Company, the main points of which are the following:

The bill charges the defendant with infringement of reissued letters patent No. 11,523, dated January 28, 1896, for an improvement in gas producers, granted to the complainant as assignee of the inventor, Edward James Duff, to whom the original letters patent, No. 517,271, were issued on March 27, 1894.

The original specification is embodied in the specification of the reissued patent and the first and second claims of the reissue are identical with the claims of the original patent. The reissued patent contains a new claim numbered 3. Under the proofs, however, it will not be necessary for the court to consider any question touching the validity or infringement of this new claim, for if the defendant infringes the reissued patent at all the device complained of is clearly covered by the first and second claims.

The distinguishing features of the gas producer described in the patent in suit are a bottom casing or chamber into which the blast of air and steam is delivered; a top or cover for this casing or chamber consisting of outwardly inclined gratings having openings to distribute the blast under the body of the fuel, and forming also guiding surfaces down which the residue ashes will slide toward the exterior of the producer, and free spaces between the lower edges of the inclined gratings and the walls of the producer through which the ashes will descend into a water trough which seals the bottom of the producer, and from which trough the removal of the ashes is effected without making any opening into the producer and without any interruption of the air blast. These features are covered by the first and second claims of this patent.

I have fully examined the prior patents in evidence in connection with the testimony relating thereto of the several witnesses, and I have reached the conclusion that in none of them is the combination of either the first or second claims of the patent in suit to be found. Anticipation of either of these claims has not been shown.

The improvement of the patent in suit is one of a high order of merit. The proof is full and convincing that by reason of its automatic and continuous method of operation in point of economy, and for good results generally, the Duff gas producer of this patent is superior to any previously known gas producer. That the improvement is patentably new and useful is most clearly established.

It only remains then to inquire whether infringement is shown. Here the case is free from any real difficulty. In all essential particulars the plaintiff's gas producer and the gas producer of the defendant are alike. The defendant has appropriated all the valuable features of the patented device and has combined the constituents in the same way. It is true that the patent in suit shows inclined gratings having plane surfaces, whereas in the defendant's structure the downward surfaces in outline are zigzag or are formed in steps. This change, however, is purely formal. In principle the two constructions are identical. The mode of operation and the results are the same. This very clearly appears from the evidence and especially from the testimony of the practical witness, H. L. Dixon.

Let a decree be drawn in favor of the complainant as respects the first and second claims of the patent.

The New York Steel & Wire Company—Offices have been opened at 69 South street by the New York Steel & Wire Company. It will be recalled that this concern are erecting a basic open hearth steel plant and rod mill at Astoria, L. I. Machinery is now being installed in buildings adjoining the mills of the Waterbury Rope Company, Brooklyn, for a wire drawing and wire rope plant and a wire nail factory. The wire rope and drawing machinery was purchased some time ago in England, and is now being set up at Brooklyn. The nail machinery was ordered recently from the Bates Machine Company, Joliet, Ill. This machinery will be ready for operation as soon as the Astoria plant is completed. Work is now progressing rapidly toward the completion of the latter plant.

The Valentine Furnace at Bellefonte, Pa., operated by the Empire Steel & Iron Company, is beating its past record, making about 120 tons daily from a mixture of Lake Superior and Pennsylvania ores. The furnace in previous runs rarely did better than 90 tons a day. The improvement is due to superior stock and to the manner of its reconstruction, under the plans of Walter Kennedy of Pittsburgh, vice-president and engineer of the Empire Company.

OBITUARY.

JOHN C. MATTHAI.

John Christopher Matthai, senior member of the firm of Matthai, Ingram & Co. of Baltimore, Md., manufacturers of tin and metal ware, died on July 4, from a complication of diseases, due to advancing age, at his country home, near Baltimore, in his seventy-eighth year. He was born at Saxe Meningen, Germany, and having learned the trade of blacksmithing and edge tool making came to this country at an early age. In 1846 he established himself in the blacksmithing business in Baltimore, and in 1870, in conjunction with his son-in-law, James E. Ingram, he established the firm of Matthai, Ingram & Co., for the manufacture of tinware. The business of the concern has since increased until it has become one of the largest of its kind in the country. The firm were recently merged into the National Enamelling & Stamping Company. The deceased was active in the management of the concern up to within a short time of his death.

J. H. BLAKE.

J. H. Blake, a well-known chemist and mining engineer, died July 5, at his home in Boston, Mass., at the advanced age of 99 years. At the age of 18 Mr. Blake established a laboratory for the manufacture of pure chemicals, at Jamaica Plain, Mass., in which the ether used in the first experiments in anaesthesia was made, under his personal direction. In connection with the work of his laboratory Mr. Blake made a journey to South America in 1835, for the purpose of investigating the extensive nitre beds. On his return from South America Mr. Blake took charge of the copper mines at San Fernando, Cuba; subsequently explored a portion of the Isle Royale region, Lake Superior, and then settled in Boston as a consulting chemist and civil engineer. In his lifetime Mr. Blake filled many important business and administrative positions.

W. E. DICKINSON.

Capt. W. E. Dickinson, one of the pioneer mining men of the upper peninsula of Michigan and northern Wisconsin, died on June 15, at Florence, Wis., at the age of 75 years. He was superintendent of the old Bohemia Copper Mine in Ontonagon County, Mich., early in the 50s, and later on of the Isle Royale Mine, at Houghton. When the Menominee iron range first opened up he was appointed superintendent of the Commonwealth Mine, near Florence, Wis., which position he held for a number of years. Captain Dickinson was at one time superintendent of iron mines in Cuba. At the time of his death he represented a large powder company.

GEORGE ECKERT.

George Eckert, a well-known Eastern Pennsylvania iron manufacturer, died on July 6, at his home in Reading, Pa., aged 58 years. He was a son of the late Isaac Eckert, a famous Pennsylvania ironmaster, and was for many years the head of the firm of Eckert Brothers, until recently owners of the Henry Clay furnaces.

GEORGE W. COATES.

George W. Coates, a leading citizen and manufacturer of Beaver Falls, Pa., died on July 5 at his home in that city after a long illness, at the age of 43 years. He was born in Pittsburgh. Mr. Coates was a member of the Beaver Falls Steel Company, and acted as chemist to the concern.

S. H. HOLLEY.

S. H. Holley, manager of the Lake Shore Iron Works, and one of the foremost business men of Marquette, Mich., passed away on July 4, after a long and painful illness, from paralysis and bright's disease. He was a native of Winnebago County, Wis., and was born in 1849. At the age of 17 he entered the Portage Lake Foundry & Machine Company's shops, at Houghton, Mich., where he learned the trade of machinist, rising to the position of foreman at an early age. Subsequently he served as marine engineer on the lakes, then spent some years in the mining machinery business in the Black Hills, and later became master mechanic of the Vulcan iron mines in Michigan. In 1887 he went to Australia, where he spent some time putting in machinery at the Broken Hill silver mines, after which he returned to this country and located at Marquette, where he continued in business to the time of his death. Mr. Holley was an inventor of some note, among his best known patents being the Superior gas engine and an amphibious boat.

A movement has progressed pretty far to bring under the control of one organization all the pyrites mining companies of the United States.

Pig Iron Production Increased.

A Further Decline in Stocks.

One by one the new and old furnaces which have been getting ready are falling into line as producers, but there is still a considerable number struggling to resume. This month has already witnessed the starting of some and others are nearly ready. As an offset some furnaces, long active, are forced out for repairs, and temporarily at least an important group in the Shenango Valley is idle on account of labor troubles. Generally speaking the summer is having its usual effect in reducing the tonnage produced.

The stocks show a further sharp decline—an ample proof that output is not yet up to consumption.

The weekly capacity of the furnaces in blast on July 1 compares as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
July 1, 1899.....	237	263,363
June 1.....	220	254,062
May 1.....	217	250,096
April 1.....	205	245,746
March 1.....	192	228,195
February 1.....	195	237,639
January 1.....	200	243,516
December 1, 1898.....	195	235,528
November 1.....	196	228,985
October 1.....	192	215,635
September 1.....	186	213,043
August 1.....	187	206,777
July 1.....	185	216,311
June 1.....	190	225,398
May 1.....	194	234,163
April 1.....	194	233,339
March 1.....	193	234,490
February 1.....	184	228,338
January 1.....	188	226,606
December 1, 1897.....	191	226,024
November 1.....	183	213,159
October 1.....	171	200,128
September 1.....	161	185,506
August 1.....	152	165,378
July 1.....	145	164,064
June 1.....	146	168,880
May 1.....	146	170,528
April 1.....	153	173,279
March 1.....	156	169,986

The status of the charcoal furnaces was as follows:

Charcoal Furnaces in Blast July 1, 1899

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New England.....	11	2	185	9	805
New York.....	2	2	196	0	0
Pennsylvania.....	13	2	108	11	550
Maryland.....	4	0	0	4	1,569
Virginia.....	4	0	0	4	437
Ohio.....	3	0	0	3	420
Kentucky.....	3	0	0	3	280
Tennessee.....	6	2	729	4	710
Georgia.....	3	1	400	2	390
Alabama.....	7	2	749	5	950
Michigan, Missouri and Wisconsin.....	15	8	3,571	7	3,213
Texas.....	4	0	0	4	873
Utah.....	1	0	0	1	175
Oregon.....	1	0	0	1	275
Totals.....	81	20	6,018	61	9,477

As compared with previous months the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
July 1, 1899.....	20	6,018
June 1.....	16	4,943
May 1.....	20	4,846
April 1.....	17	4,777
March 1.....	16	4,330
February 1.....	17	4,967
January 1.....	20	6,026
December 1, 1898.....	18	6,018
November 1.....	20	5,947
October 1.....	20	5,732
September 1.....	21	6,293
August 1.....	22	6,459
July 1.....	19	5,647
June 1.....	20	6,762
May 1.....	18	6,571
April 1.....	16	5,716
March 1.....	16	5,470
February 1.....	14	4,734
January 1, 1898.....	16	5,442
December 1, 1897.....	19	5,061
November 1.....	19	4,656
October 1.....	20	4,636
September 1.....	21	4,555
August 1.....	20	4,003
July 1.....	14	2,894
June 1.....	15	3,321
May 1.....	18	3,729
April 1.....	16	3,368
March 1.....	18	5,425

Coke and Anthracite Furnaces in Blast July 1.

Location of furnaces.	Total No. of stacks.	No. in blast.	Capacity per week.	No. out of blast.	Capacity per week.
New York.....	13	4	4,930	9	5,750
New Jersey.....	3	1	1,633	1	550
Spiegel.....	3	3	442	0	0
Pennsylvania:					
Lehigh Valley.....	27	14	7,687	13	4,515
Spiegel.....	1	0	0	1	90
Schuylkill Valley.....	14	9	6,521	5	3,309
Upper Susquehanna.....	4	3	3,173	1	600
Lower Susquehanna.....	12	5	4,832	7	2,536
Lebanon Valley.....	11	10	6,629	1	534
Spiegel.....	1	1	500	0	0
Pittsburgh District.....	30	29	61,791	1	1,750
Spiegel.....	1	1	1,995	0	0
Shenango Valley.....	15	14	19,260	1	900
Western Pennsylvania.....	19	11	13,685	8	4,283
Spiegel.....	1	1	709	0	0
Maryland.....	5	2	3,798	3	3,750
Wheeling District.....	10	10	14,126	0	0
Ohio:					
Mahoning Valley.....	13	11	18,731	2	1,790
Central and Northern.....	11	8	11,010	3	2,213
Hocking Valley.....	3	1	303	2	830
Hanging Rock.....	11	8	3,455	3	1,090
Illinois.....	16	13	24,070	3	3,585
Spiegel.....	1	1	794	0	0
Minnesota.....	1	0	0	1	629
Wisconsin.....	4	4	3,733	0	0
Missouri.....	2	1	950	1	600
Colorado.....	3	2	2,286	1	700
The South:					
Virginia.....	21	11	7,208	10	6,017
Kentucky.....	5	5	2,761	0	0
Alabama.....	30	22	22,886	8	6,400
Tennessee.....	11	10	6,597	1	700
Georgia.....	2	0	0	2	960
North Carolina.....	2	1	650	1	400
Totals.....	306	217	257,345	89	54,481

In comparison with previous months the record of the coke and anthracite furnaces stands as follows in gross tons:

	Number in blast.	Capacity per week.
July 1, 1899.....	217	257,345
June 1.....	204	249,119
May 1.....	197	245,249
April 1.....	188	240,969
March 1.....	175	232,865
February 1.....	178	223,672
January 1, 1899.....	180	237,490
December 1, 1898.....	177	237,510
November 1.....	176	222,988
October 1.....	172	209,903
September 1.....	165	206,750
August 1.....	165	200,318
July 1.....	166	210,664
June 1.....	170	218,636
May 1.....	176	227,592
April 1.....	178	227,623
March 1.....	177	228,960
February 1.....	170	223,604
January 1, 1898.....	172	221,166
December 1, 1897.....	172	220,962
November 1.....	164	208,503
October 1.....	151	195,492
September 1.....	140	180,951
August 1.....	132	161,375
July 1.....	131	161,170
June 1.....	131	165,059
May 1.....	133	166,799
April 1.....	137	167,911
March 1.....	138	164,561

Among the charcoal furnaces which were started in June we may name Gaylord and Peninsula in Michigan, Sligo in Missouri and Cumberland in Tennessee. Richmond in Massachusetts and Bloom in Ohio were temporarily out and Vesuvius in Ohio is about to start.

During June the following furnaces were blown in: Buffalo, Niagara and Poughkeepsie in New York, one Crane in the Lehigh Valley, Douglas in the Shenango Valley, Allegheny in Virginia, Sarah in the Hanging Rock region, one Alice in Alabama and Helen in Tennessee. There were blown out for repairs one Henry Clay in the Schuylkill Valley, Allentown in the Lehigh Valley, Dover in Ohio and one Joliet in Illinois. Quite a number of furnaces have already started or will start this month, including Franklin in New Jersey, Juniata in Western Pennsylvania, New York in the Hocking Valley, two Lorain in the Cleveland district, Belfont in the Hanging Rock region and Calumet in Michigan. This will add materially to the production.

Furnace Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as follows on July 1, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron:

Stocks.	Feb. 1.	Mar. 1.	April 1.	May 1.	June 1.	July 1.
Anthracite and coke.....	365,311	328,987	229,907	205,125	167,587	114,788
Charcoal.....	97,593	98,094	82,056	79,002	65,643	54,547
Totals.....	462,904	427,081	311,968	284,127	233,235	169,335

Warrant Stocks.

We are indebted to the American Pig Iron Storage Warrant Company for the following statement of stocks of warrant iron:

Stocks.	Feb. 1.	Mar. 1.	Apr. 1.	May 1.	June 1.	July 1.
Coke and A.	90,700	95,000	82,700	60,700	46,900	33,900
Charcoal.....	31,300	31,300	27,000	25,800	20,400	16,900
Totals.....	135,200	135,200	109,700	86,500	67,300	50,800

In other words, the total reported stocks figure out a little more than one week's consumption.

PERSONAL.

Joseph Wetzler, president of the Electrical Engineer Institute of Correspondence, New York, has had the honorary degree of Electrical Engineer conferred upon him by the Stevens Institute of Technology, of which he is a graduate.

C. S. Painter of the American Steel Hoop Company of Pittsburgh has sailed for Europe.

John Q. Denny of Harrisburg, Pa., has been elected general manager of the Susquehanna Iron & Steel Company, recently organized by Philadelphia and Pittsburgh capitalists.

I. W. Morton of the Simmons Hardware Company, St. Louis, has departed on a pleasure trip to the Northwest. British Columbian points are included in the itinerary.

Walter E. Stoy, for some years superintendent and afterward general manager of the Ohio Falls Iron Works, at New Albany, Ind., has been appointed superintendent of the Champion Iron & Steel Company's rolling mill, at Muskegon, Mich.

John H. Converse of the Baldwin Locomotive Works, Philadelphia, has offered to supplement his earlier donations to the University of Vermont by one of \$50,000, which is to be used in the endowment of a chair of Commerce and Economics.

W. C. Temple of Cahall Sales Department, Pittsburgh, has gone to Long Beach, L. I., for a well-earned vacation of about two months. Mr. Temple has sold up the Cahall Sales Department with orders enough for Cahall boilers to run their works to utmost capacity for three or four months, and feels he is entitled to a much needed rest.

Alfred B. Duff has sold his entire interest in the Duff Patents Company of Pittsburgh, builders of Duff gas producers. Mr. Duff will take a needed vacation, but has already established temporary quarters in room 813, Tradesmen's Building, Pittsburgh. He will make a specialty of the gas engineering business, in which he has had a very wide experience.

Jacob Smyser, general manager of the Jeffersonville (Ohio) branch of the American Car & Foundry Company, and formerly president of the Ohio Falls Car & Locomotive Works and the Ohio Falls Car Mfg. Company, has resigned, and will hereafter have only an advisory connection with the works. He has been connected with the industry since 1864. J. D. Ingram will succeed Mr. Smyser in the management of the Jeffersonville plant.

Alva C. Dinkey, for the past six years chief electrician of the Homestead Steel Works of the Carnegie Steel Company, Limited, has been made assistant to Superintendent W. E. Corey, having mechanical matters in charge.

Frank S. Witherbee of Witherbee, Sherman & Co., Port Henry, N. Y., sailed for Europe last week.

Geo. M. Summers of Youngstown, Ohio, has been appointed superintendent of the Lake Erie Iron Company, of Republic Iron & Steel Company, at Cleveland, Ohio.

General Chas. L. Fitzhugh, formerly of the Shoenberger Steel Company, at Pittsburgh, but who retired from that concern when it was taken over by the American Steel & Wire Company, will sail for Europe on Wednesday, July 26, for an indefinite stay.

William J. Smith of the Geometric Drill Company, Westville, Conn., will sail on the "Campania," on the 15th, for a three or four months' sojourn in Europe in the interests of the company. He will visit England, Scotland, Germany, Holland, Belgium, Norway, Sweden, Denmark and France, and will also probably go to Russia.

A. G. Mills of the Otis Elevator Company sails for Europe to-day.

Information Wanted.—A correspondent wishes the address of manufacturers of dies for noodle and macaroni presses.

MANUFACTURING.**Iron and Steel.**

It is reported that a large pipe and tube plant will be built near Elizabeth, Pa. Some of the parties interested are said to have been formerly connected with the Duquesne Tube Company of Pittsburgh, whose plant at Duquesne was sold to the Carnegie Steel Company, Limited, of Pittsburgh.

The plant of the Greensburg Steel Company, at South Greensburg, Pa., formerly operated by the Pittsburgh Tool Steel Company, but which has been idle for some time, has been sold to some Pittsburgh and Wheeling parties, who will put the plant in operation at an early date in the manufacture of fine tool steel.

The rolling mill of the Douglassville Iron Company, at Douglassville, Pa., has resumed operation after an idleness of nearly ten years.

The Scullin-Gallagher Iron & Steel Company filed articles of incorporation at St. Louis last week. The capital stock is \$500,000. Thomas M. Gallagher, one of the incorporators, has until within a few days been vice-president and superintendent of the Shickle, Harrison & Howard Iron Company of St. Louis, but resigned to take charge of the new enterprise. A plant for the manufacture of steel castings, principally for railroad purposes, will be built on the line of the Missouri Pacific Railroad near Clifton Heights.

David Lamond, contractor and engineer, 716 Ferguson Building, Pittsburgh, has received a contract from Corrigan, McKinney & Co. of Cleveland, Ohio, to erect a plant of stoves of the C. H. Foote two-pass type, at the Charlotte Furnace, Scotland, Pa. The stoves are to be 19 x 75 feet in size.

The National Steel Company have signed the Amalgamated Association scale for their Shenango Works, at New Castle, Pa.

The Beaver Works of the American Tin Plate Company, at Lisbon, Ohio, are closed on account of an attempt to organize the employees into a lodge of the Amalgamated Association. This plant, when operated by the Beaver Tin Plate Company, was run non-union.

The Tyrone Iron Works, at Tyrone, Pa., who a month ago made a 10 per cent. advance in wages, have announced an additional 10 per cent. advance, going into effect from July 1.

At Pittsburgh, on Monday, July 10, a deed was filed conveying the property of the Oil Well Supply Company, known as the Continental Tube Company, to the National Tube Company for \$1,023,274.

The Canton Roll & Machine Company of Leechburg, Pa., have been incorporated for the manufacture of iron and steel, with a capital of \$100,000. The incorporators are J. E. Carnahan, W. J. Steele of Leechburg, W. M. Bleecker of New Castle, H. L. Smith of Smithfield, West Va.; A. J. Steele of North Baltimore, Ohio; F. Kepp of Allegheny.

In the month of June the converting department of the Youngstown Works of the National Steel Company, at Youngstown, Ohio, turned out 4550 heats, the output being 46,378 tons of ingots. The finished tonnage amounted to 41,728 tons, of which 11,604 tons were billets and 30,124 tons were small billets, tin and sheet bars. Excellent records for production are being made in this plant right along. Out of a possible 624 turns in 1898, 614 were made.

Old Alcalde Furnace, at Rusk, Texas, is to blow in on the 20th inst.

The plant of the Ohio Tube Company, Warren, Ohio, has been formally taken over by the National Tube Company, the deeds having been filed on Monday, July 10, at Akron, Ohio. The consideration was \$650,000.

The Bethlehem Steel Company of Bethlehem, Pa., have advanced wages of their blast furnace employees 10 per cent. and puddlers 25 cents per day, making the boiling rate \$3.75.

At Pittsburgh the Pittsburgh Horseshoe Company have filed application for the dissolution of their charter and distribution of their assets.

The Cheshire, Richmond and Van Deusenville furnaces, at Richmond Furnace, Mass., belonging to the Richmond Iron Works, and which have been out of blast for repairs, are expected to blow in about August 1.

The Logan Mfg. Company of Phoenixville, Pa., have organized to manufacture iron and steel, with a capital of \$50,000. The incorporators are George F. Huff, J. Howard Rhoads and Richard Khuan, Jr.

The Lucknow Forge of the Lucknow Forge Company, Limited, at Lucknow Station, 4 miles west of Harrisburg, which has been idle for a long time, is being repaired and will be started up at an early date.

The Potomac Steel Company are making extensive repairs to the old mill of Baltimore and Ohio, at Cumberland, Md.

The Pine Iron Works of Berks County, Pa., have been incorporated with a capital stock of \$75,000. The directors are Jos. Bailey, H. L. Champlain, LeRoy J. Wolf, Charles L. Bailey, Jr., and Joseph L. Bailey.

Machinery.

The Hawley Down Draft Furnace Company have been incorporated in Minnesota, with a capital of \$100,000, and will

locate a plant at Minneapolis to manufacture their specialties for that territory.

W. G. Bryant, Cartersville, Mo., has just completed the erection of a foundry.

The Olds Motor Company are arranging to build an extensive plant at Detroit, Mich., for the manufacture of automobiles.

Gardiner, Worthen & Goss, Tucson, Ariz., have recently added a foundry to their plant, and are now prepared to make castings up to 2000 pounds in weight.

The Pratt & Whitney Company, Hartford, Conn., announce the disposal of all their interests in automatic weighing machines to the New England Automatic Weighing Machine Company, 56 Pearl street, Boston, Mass., who will hereafter manufacture these machines and attend to all matters in connection with the sale of them. Orders accepted by the Pratt & Whitney Company and unfulfilled at this time will be completed by the company aforesaid, who will also handle all accounts and subjects referring to past sales.

The Gray Iron Company of Mt. Joy, Lancaster, Pa., are erecting an additional foundry, which will double their present capacity.

The Pennsylvania Casting and Machine Company of Pittsburgh have been chartered with a nominal capital of \$1000. The new concern will erect a small plant in lower Allegheny, Pa., and will carry on a general foundry and casting business.

The Bullock Electric Mfg. Company, Cincinnati, Ohio, report among their numerous sales for June the following: To the Burge Steel and Iron Company, Portsmouth, Ohio, one 10 and one 20 horse-power type "H" motor; to F. B. Shuster, New Haven, Conn., one 12.5 kilowatt type "H" generator; to the Maryland Steel Company, Sparrow's Point, Md., one 10 horse-power crane motor; to W. D. Forbes & Co., Hoboken, N. J., one 7.5 kilowatt engine type generator; to the Wyeth Hardware Mfg. Company, St. Louis, Mo., two 10 horse-power elevator motors, and to Milliken Bros., New York, one 12 horse-power type "H" motor.

The Morgan Engineering Company, Alliance, Ohio, are making regular shipments of disappearing gun carriages to Sandy Hook. They have additional orders for these, which are now under construction. The large works of this concern are being employed to full capacity in every department, giving employment to a larger force than ever before.

The Harrison Safety Boiler Works of Germantown Junction, Pa., report the following recent sales of the Cochrane feed water heaters and purifiers: Illinois Steel Company, Chicago, Ill., 22,000 horse-power; Edison Electric Illuminating Company, Boston, 4000 horse-power; Duluth Furnace Company, 1500 horse-power; Mariopol & Nicopol Mining & Metallurgical Company, Russia, 2500 horse-power; McCormick Harvesting Machine Company, 1500 horse-power; Andrews & George, Yokohama, Japan, 50 horse-power; Reed Furnace Company, West Middlesex, Pa., 1250 horse-power; Commonwealth Electric Company, Chicago, 3000 horse-power; New England Engineering Company, 500 horse-power; Pittsburgh Terra Cotta Company, Pt. Murray, N. J., 500 horse-power; Spartansburg (S. C.) Electric Lighting & Power Company, 600 horse-power. And the following sales of the Cochrane separators: Carnegie Steel Company, two 16-inch, one each 14½-inch and 12-inch; Missouri Railroad Company, St. Louis, Mo., 36-inch vacuum oil and two 12-inch; United States Navy Yard, Charlestown, Mass., 10-inch; Missouri-Edison Electric Company, St. Louis, Mo., three 10-inch receivers and one 10-inch horizontal; Oil Well Supply Company, Bradford, Pa., two 7-inch and one 4½-inch; Procter & Gamble Company, Ivorydale, Ohio, 3-inch; American Blower Company, London, England, 4-inch; Latrobe, Pa., Steel Company, 7-inch; British Columbia Electric Railway Company, Limited, Vancouver, B. C., two 8-inch; Lehigh Valley Railroad Company, Sayre, Pa., 10-inch; Walworth Construction & Supply Company, Boston, two 6-inch; C. A. McDonald, Chicago, 4-inch; Scott Valve Company, Chicago, 10-inch.

The M. C. Bullock Mfg. Company, Chicago, manufacturers of mining machinery, state that they found the demand for manufactured machinery for the month of June even greater than for the preceding month. There seems to be no slackening up on account of advancing prices. New enterprises in the mining industry and the older established concerns present a steady demand. The diamond drill business has been quite brisk, indicating that prospecting is on the increase.

The D. Clint Prescott Company, owners of the Marinette Iron Works, Marinette, Wis., have bought the Menominee Iron Works, Menominee, Mich., and will transfer their operations to the latter place, enlarging the plant by the addition of greater foundry facilities. The Marinette works will be taken by other parties who propose to manufacture a special line of machinery.

Elroy Petit and Frank Gilmore have formed a partnership to build and operate a foundry and machine shop at Alexis, near Galesburg, Ill.

A dispatch states that the Chandler Pump Company of Cedar Rapids, Iowa, have contracted for a new warehouse, to cost \$10,000. The dimensions stated are 50 x 222 feet.

The Fergus Iron Works Company, Fergus Falls, Minn., have been organized to carry on a general foundry, machine shop and mill furnishing business, with a capital of \$50,000. The in-

corporators are H. P. Bergman, D. L. Chelgren, H. E. Bergnernd of Fergus Falls, K. H. Bergernd of Aastad, Minn.

The Schuster Scale & Machine Works have begun the manufacture of scales, to weigh from 4 to 20 tons, at Columbus, Neb. They have their own foundry and machine shop. Herman Schuster is manager.

The Crescent Mfg. Company, Muskegon, Mich., are erecting a new machine shop, 26 x 50 feet and another warehouse, 60 x 100 feet.

The Rock Island Railroad had intend to equip a machine shop at Council Bluffs, Iowa. It will occupy a building already erected, 20 x 80 feet.

McIntyre & Mansfield have purchased and will operate the Baraboo Iron Works at Baraboo, Wis., formerly owned by S. H. Wood & Co.

National Tube Company Organized.

At a meeting held in New York yesterday final details in the organization of the National Tube Company were perfected. The executive officers of the company, who had been previously selected, were elected and the directors were chosen. An official statement given out by the company follows:

The net earnings of the current year will be between \$6,000,000 and \$7,000,000, while the annual savings in transportation and other expenses are assured at from \$2,000,000 to \$3,000,000 in addition.

The capitalization of the company is \$80,000,000, divided into 7 per cent. cumulative preferred stock \$40,000,000 and common stock \$40,000,000. The preferred stock dividend is, therefore, \$2,800,000 and is limited to that amount, but is made cumulative. This stock is preferred over the common stock on liquidation. Not \$1 of mortgage lien exists upon any of the properties, and the stock is further protected by the provision in the charter that no mortgage lien shall ever be placed upon any realty of the company, save with the written consent of at least 80 per cent. in amount of the holders of both preferred and common stock. The common stock is entitled to all dividends declared in excess of \$2,800,000 payable to the preferred stock. The company own a large number of patents, among which are several of such fundamental character as to enable them to control certain important features of manufacture and use. The company start with abundant working capital, including several million dollars in cash.

All the stockholders of the various old companies were offered by the consolidation purchasers an opportunity to take either cash or the stock of the new company in payment. Over 90 per cent. elected to take the new stock, and only 10 per cent. (mostly scattered holders in small amounts) elected to take cash in payment, thus showing, after full examination, their complete faith in the enterprise of those who for years have been connected with the business and have brought it up to its present prosperity.

At a full meeting of the Board of Directors, held today in New York City, the following named directors and officers were elected:

Directors: Joshua Rhodes, late president Pennsylvania Tube Company; J. J. Vandergriff, late director Pennsylvania Tube Company; Charles H. Coster, of P. J. Morgan & Co.; William B. Rhodes, late general manager and director of Pennsylvania Tube Company; F. J. Hearne, late general manager and director of Riverside Iron Works; J. N. Vance, late president Riverside Iron Works; John Eaton, president Oil Well Supply Company; Francis L. Potts, late president Chester Pipe & Tube Company; F. R. Tobey, president Allison Manufacturing Company; Jonathan Rowland, late vice-president Morris Tasker & Co.; Daniel O'Day, director Standard Oil Company; O. C. Barber, late general manager American Tube & Iron Company; Henry Aird, late proprietor Cohoes Tube Works; John Don, late president Syracuse Tube Company; Edmund C. Converse, late vice-president and general manager National Tube Works Company; William Nelson Cromwell, counsel; William S. Eaton, late director National Tube Works Company; A. F. Luke, late treasurer and director National Tube Works Company; William J. Curtis, of Sullivan & Cromwell; William P. Hamilton, with J. P. Morgan & Co.; A. H. Gillard, with J. P. Morgan & Co.

Executive officers: President, Edmund C. Converse; chairman of the board, Joshua Rhodes; first vice-president, in charge of manufacturing, F. J. Hearne; second vice-president, in charge of mercantile affairs, Horace Crosby; third vice-president, financial, Francis L. Potts; general manager manufacturing department, A. S. Matheson; treasurer, Arthur F. Luke; assistant treasurer (at Pittsburgh), William H. Latshaw; general counsel, Sullivan & Cromwell.

The official and financial headquarters will be at New York, the manufacturing headquarters at Pittsburgh.

The Iron and Metal Trades.

Our usual monthly Pig Iron statistics show that production, while it continued to increase in June, was inadequate to meet the demand, the stocks having been further reduced. The production of the Coke and Anthracite furnaces expanded from 249,060 tons weekly on June 1 to 257,000 tons weekly on July 1, and yet furnace and warrant stocks fell from 215,000 to 149,000 tons, or four days' supply reckoned on the whole output. This figure is, however, somewhat misleading, since the stocks cover only the metal on hand at the furnaces running for the open market, representing about one-quarter of the output. But even making due allowance for this the stocks are at a very low ebb.

It is true that a number of furnaces have started since the first of this month and that others will be in before the beginning of August, but yet an easing in the situation is not yet in sight, particularly since an important group of furnaces in the Shenango Valley are banked on account of labor troubles. Although they are expected to start soon, a certain amount of tonnage has been lost.

It has been a matter of surprise that thus far there have been few indications that high prices have adversely affected consumption. Probably the fact that deliveries have been at a much lower range of values may explain it. Quite recently, however, a number of instances of holding over enterprises have come under our notice. They are insignificant when compared with the large amount of new work coming up and in the fearful pressure of deliveries are lost sight of, but they may be the forerunners of more important developments late in the year.

The Pig Iron markets have been fairly active, and in the East continue to display an advancing tendency. In Pittsburgh there has been a moderate movement in Bessemer Pig at \$20.75, delivered.

Some moderate sales of Steel Billets have been recorded, and there is now an inquiry in the Eastern market for a block of about 12,000 tons, for delivery during the current year.

Reports have been current to the effect that a large block of Ship Plates had been purchased in Glasgow for shipment to this country. We are unable to verify these statements, which may be due to purchases by one large concern to fill earlier contracts, and thus obtain relief here. It is a fact on the other hand that a leading mill in the Central West has just made a contract for a very large tonnage of Plates for the Clyde, the deliveries to run over a year or more.

In regard to the contract for 180,000 tons of Steel Rails for Russia, we have it from a good source that the business is practically closed.

Structural Material has been advanced \$5 per ton during the week, thus bringing that branch into line with other departments. Chicago reports the placing of one order for 10,600 tons for a Western railroad. In other parts of the country very large requirements are coming up.

The Sheet market has shown great activity and a further advance has been made. One season contract, calling for 4000 tons, was placed in Chicago this week.

The latest dispatches from Chicago state that the conferences between the American Tin Plate Company and the Amalgamated Association have not yet come to an end. The reports indicate that an early settlement may be looked for.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

	July 12, 1899.	July 5, 1899.	June 14, 1899.	July 13, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$19.50	\$18.50	\$17.50	\$10.00
Foundry Pig, No. 2, Southern, Cincinnati.....	17.75	17.00	16.00	9.00
Foundry Pig, No. 2, Local, Chicago.....	18.50	18.50	17.50	11.00
Bessemer Pig, Pittsburgh.....	20.75	20.35	18.50	10.25
Gray Forge, Pittsburgh.....	17.50	17.00	16.25	9.00
Lake Superior Charcoal, Chicago.....	21.50	21.50	19.00	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh.....	33.00	32.50	31.50	14.50
Steel Billets, Philadelphia.....	34.50	34.00	31.50	16.50
Steel Billets, Chicago.....			32.50	16.25
Wire Rods, Pittsburgh.....		40.50		19.50
Steel Rails, Heavy, Eastern Mill.....	28.00	28.00	27.00	17.00
Spikes, Tidewater.....	1.90	1.85	1.80	1.40
Splice Bars, Tidewater.....	1.80	1.75	1.70	1.05
OLD MATERIAL:				
O. Steel Rails, Chicago.....	15.00	15.00	13.00	8.25
O. Steel Rails, Philadelphia.....	16.00		14.00	9.75
O. Iron Rails, Chicago.....	18.50	18.50	17.50	12.50
O. Iron Rails, Philadelphia.....	20.00		18.00	12.00
O. Car Wheels, Chicago.....	15.50	16.00	16.00	11.50
O. Car Wheels, Philadelphia.....	16.00		15.50	10.00
Heavy Steel Scrap, Chicago.....	13.00	13.00	12.00	8.00
FINISHED IRON AND STEEL:				
Refined Iron Bars Philadelphia.....	2.00	2.00	1.85	1.00
Common Iron Bars, Youngstown.....	1.85	1.80	1.75	0.90
Steel Bars, Tidewater.....	2.10	2.05	2.00	1.05
Steel Bars, Pittsburgh.....	2.00	2.00	2.00	0.90
Tank Plates, Tidewater.....	2.60	2.50	2.55	1.20
Tank Plates, Pittsburgh.....	2.40	2.40	2.30	1.10
Beams, Tidewater.....	2.15	1.90	1.85	1.30
Beams, Pittsburgh.....	2.00	1.75	1.75	1.15
Angles, Tidewater.....	2.15	1.85	1.85	1.20
Angles, Pittsburgh.....	2.00	1.75	1.75	1.05
Skelp, Grooved Iron, Pittsburgh.....	2.15	2.15	2.05	1.05
Skelp, Sheared Iron, Pittsburgh.....	2.35	2.35	2.20	1.07½
Sheets, No. 27, Chicago.....	3.05	3.05	3.00	1.95
Sheets, No. 27, Pittsburgh.....	3.00	2.85	2.85	1.85
Barb Wire, f.o.b. Pittsburgh.....	2.95	2.95	2.95	1.70
Wire Nails, f.o.b. Pittsburgh.....	2.35	2.35	2.35	1.30
Cut Nails, Mill.....	2.05	2.05	2.05	1.05
METALS:				
Copper, New York.....	18.25	18.25	18.00	11.65
Spelter, St. Louis.....	5.90	5.70	6.00	4.35
Lead, New York.....	4.55	4.50	4.45	4.00
Lead, St. Louis.....	4.45	4.35	4.25	3.90
Tin, New York.....	27.87½	27.37½	25.60	15.55
Antimony, Hallett, New York.....	10.00	10.00	10.00	9.00
Nickel, New York.....	38.00	38.00	38.00	34.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York.....		4.05	4.05	2.85

Chicago. (By Telegraph.)

Office of The Iron Age, 805 Fisher Building.
CHICAGO, July 12, 1899.

The most important change in prices in the past week is an advance of \$5 per ton made on the 7th inst., on Structural Shapes. The scarcity of Finished Iron and Steel is causing quite a reversal of the usual currents of trade. Inquiries are being received here from the East, even as far as New England, for Bars, Shafting and Open Hearth products generally. The largest manufacturers in the country are now from four to ten months behind on orders.

Pig Iron.—The Calumet Furnace was blown in on July 10, and will add considerably to the local output. It will not for some time relieve the situation to any extent, as its product is practically sold for about a year. Considerable business has been placed in moderate sized orders for both local and Southern Iron for deliveries running up to March or April of next year. Very little local Iron is available. The Southern furnace companies, however, are now showing a disposition to sell for delivery further into the future. A sharp demand is noted for small lots of all kinds of Iron for early delivery. We quote for cash as follows:

Lake Superior Charcoal.....	\$21.50 to \$23.00
Local Coke Foundry, No. 1.....	19.00 to 19.50
Local Coke Foundry, No. 2.....	18.50 to 19.00
Local Coke Foundry, No. 3.....	18.00 to 18.50
Local Scotch, No. 1.....	20.00 to 20.50
Ohio Strong Softeners, No. 1.....	20.80 to 21.50
Southern Silvery, according to Silicon.....	20.00 to 22.00
Southern Coke, No. 1.....	19.65 to 20.00
Southern Coke, No. 2.....	18.65 to 19.15
Southern Coke, No. 3.....	18.15 to 18.65
Southern Coke, No. 1 Soft.....	19.65 to 20.00
Southern Coke, No. 2 Soft.....	18.65 to 19.15
Foundry Forge.....	17.65 to 18.15
Gray Forge and Mottled.....	17.65 to 18.15
Southern Charcoal Softeners.....	19.00 to 20.00
Alabama and Georgia Car Wheel.....	20.50 to 21.50
Malleable Bessemer.....	21.00 to 22.00
Standard Bessemer.....	21.00 to 22.00
Jackson County and Kentucky Silvery, according to Silicon.....	.... to 24.00

Bars.—The Bar Iron market has been a little less active the past week, probably due to the general disposition to take advantage of a brief holiday season. Inquiries have improved considerably since the beginning of this week, and quite a tonnage is now in sight. Or-

ders for Bar Iron are being received from points much further East than usual. A very good trade is reported in Soft Steel Bars. Some heavy orders have been placed from implement manufacturers, one of them calling for an exceptionally large tonnage, which is reported to have been placed with a distant mill at something less than prevailing market prices. Mill shipments are quoted at 1.85c. to 1.95c., Chicago, on Common Iron, and 2c. to 2.15c. on Soft Steel Bars. Hoops have again been advanced, and are now held at 2.40c., base, for Bands. Jobbers have rarely, if ever, had a heavier demand from stock in July than at present. Their assortments are badly broken, and great difficulty is experienced in securing satisfactory deliveries from mills. They quote small lots of Bar Iron at 2.15c., Soft Steel Bars at 2.10c. to 2.30c., according to quantity; 3.25c. for large lots of Norway and Swedish Iron, and 3.50c. for small lots.

Structural Material.—An unexpectedly large order for Bridge Material has just been placed with a local concern by a Western railroad company amounting to 10,600 tons. The Commonwealth Electric Company have contracted for a new building to take 500 tons and another 500 tons will be required for a building in an Indiana city. Small orders are coming in so freely that the aggregate tonnage foots up to quite heavy figures. Manufacturers are getting far in arrears on deliveries, the largest makers being now from four to five months behind. Prices have been advanced \$5 per ton during the week. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15 inches and under, and Angles 3 to 6 inches, 2.15c.; Beams, &c., 18 inches and over, and Angles over 6 and under 3 inches, 2.25c.; Tees, 2.20c.; Universal Plates, 2.65c. Store prices take the usual advance above prices for mill shipment.

Merchant Pipe.—Manufacturers report a light demand, not much mill business being expected at this time of the year. Mills, however, are still far behind on deliveries. Warehouse stocks are badly broken, small sizes of Pipe being extremely scarce and commanding high prices. Merchant Pipe for mill shipment continues to be held at 50 and two 10's, but no mill prices are being made on Casing Pipe and Boiler Tubes. Merchant Steel Boiler Tubes are now quoted in small lots, 1¼ to 1½ inches, inclusive, 40 per cent. off; 2 to 2¼ inches, inclusive, 50 per cent. off; 3 inches and larger, 55 per cent. off.

Plates.—The demand from mill and warehouse continues satisfactory, but no signs of relief are yet visible in the supply. Mills are far behind on deliveries, and jobbers are making sales all over the country, East as well as West, and in Canada. They have been reaping the benefits of their policy of carrying large stocks. They quote Tank Steel from stock at 3c. upward, and Flange at 3.25c. upward, but an early advance is not improbable. Some Eastern mills continue to quote for late summer delivery 2.80c., Chicago, for Tank Steel; 2.90c. for Flange, 3c. for Marine, and 3¼c. to 5¼c. for Fire Box.

Sheets.—The market has been rather quiet, except as to season contracts with manufacturing consumers. One of these is said to have called for about 4000 tons, and was taken by a Pennsylvania mill. Mill shipments of No. 27 Black are quoted at 3.05c. to 3.15c., Chicago, and Galvanized Sheets at 70 and 10 to 70 and 5 per cent. off, with usual freight allowance. Jobbers on the Mississippi River have at last raised their prices to a parity with those of Chicago jobbers. Chicago jobbers quote small lots of No. 27 Black at 3c. to 3.15c., Wood's Smooth, 3.35c., and Galvanized at 70 per cent. off.

Merchant Steel.—A good demand is noted, with prices firmly maintained and still tending upward. Tool Steel is feeling the influence of the general market, and all manufacturers are getting into line on higher prices. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2.70c. to 2.80c.; Smooth Finished Tire, 2.45c. to 2.55c.; Open Hearth Spring Steel, 3.20c. to 3.30c., base; Toe Calk, 2.95c. to 3.15c., base; Ordinary Tool Steel, 6¼c. to 7¼c.; Specials, 13c. and upward. Jobbers have also materially advanced their prices for small lots from stock.

Billets and Rods.—Nothing has transpired in Bessemer Billets. A contract for several hundred tons of 6 x 6 Standard Basic Open Hearth Billets was placed with a mill in Eastern Pennsylvania at close to \$50 per ton, Chicago, for delivery within 60 days. The Wire Rod situation is unchanged, manufacturers having their entire output under contract.

Rails and Track Supplies.—Numerous Rail inquiries are being received from foreign as well as domestic sources. China and Japan are in the market, as well as Mexico and Brazil, for Standard Section Rails. Some of this business will probably be closed this week. Quotations are maintained at \$29 to \$30. A sale has been made of 6 miles of Light Rails for Honolulu. Quotations on these are from \$30 upward, according to weight.

Track Supplies are quoted as follows: Fish Plates, 1.60c. to 1.70c.; Spikes, 2.25c. to 2.35c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.15c.; Square Nuts, 2.90c. to 3c.; Steel Links and Pins, 2.25c. to 2.30c.; Iron Links and Pins, 2c.

Old Material.—A strong demand is noted for all kinds of Old Material. Prices, however, are not advancing, but in some cases show a slight falling off. This is the first time in the memory of local dealers that consumers have controlled the market for Old Material in good times. Dealers' selling quotations are as follows, per gross ton: Old Iron Rails, \$18.50; Old Steel Rails, mixed lengths, \$15; Old Steel Rails, long lengths, \$15.50; Relaying Rails, \$19 to \$20; Old Car Wheels, \$15.50; Heavy Melting Scrap, \$13; Mixed Steel, \$11. The following selling prices are per net ton: No. 1 Railroad Wrought, \$16 to \$16.50; Dealers' Forge, \$11.50 to \$12.50; Fish Plates, \$17; No. 1 Mill, \$8.50 to \$9; Heavy Cast, \$12 to \$12.50; Stove Plates, \$8 to \$8.25; Iron Car Axles, \$19 to \$20; Horsehoes, \$12 to \$12.50; Cast Borings, \$6.50; Steel Axle Turnings, \$8.25; Iron Axle Turnings, \$8.75; Machine Shop Turnings, \$7.50 to \$8.

Metals.—Copper is a little stronger. Carload lots of Lake are held at 18½c., and Western at 17½c. Spelter is unchanged at 5.62½c. Pig Lead has been marked up to 4.52½c., with a fair demand coming from consumers, while offerings from refiners are quite limited. The Colorado smelters are apparently no nearer to starting up.

Tin Plate.—The American Tin Plate Company and the committee from the Amalgamated Association have been holding daily sessions in the attempt to arrive at an understanding as to wages, but no conclusion has yet been reached. Meanwhile the company are making no quotations. An active demand for Tin Plate is reported by jobbers, who are receiving orders from jobbers further West, showing that stocks in the hands of the latter are evidently badly depleted. No advance has yet been made in prices, as Chicago stocks are still in good condition.

W. C. Heimbuecher, 36 La Salle street, Chicago, has been appointed exclusive sales agent in the Northwest for the Detroit Twist Drill Company, Detroit, Mich., manufacturers of Twist Drills, Reamers, &c.

Philadelphia.

Office of The Iron Age, Forrest Building, {
PHILADELPHIA, PA., July 11, 1899. }

The market presents a very complicated appearance and it is almost impossible to say anything with positiveness, except that material seems to grow scarcer and prices correspondingly dearer. It is a serious question with many well informed parties, however, whether prices are not out of proportion. If Muck Bars and Steel Billets are worth the prices now being realized, Finished Material ought to bring more money than it is selling for. How these discrepancies are to be evened up it is difficult to say, but sellers are not to blame, as they all feel that prices are high enough. On the other hand, if buyers are so needy as to bid prices up, there is no alternative but to let them have their own way, as it is beyond the power of any single concern to stem the tide. Similar conditions appear to exist in European markets, which in some measure intensifies the confusion on this side. Plates are said to have been sold by manufacturers in Scotland for direct shipment to American shipyards, but whether to the Atlantic Coast or to the Pacific is not stated. Prices there are equivalent to about 1.80c., f.o.b., for ordinary Ship Plates, while Bars are quoted at 2.10c. to 2.15c., quite a difference as compared with our prices, the former being \$12 to \$15 below our figures, while Bars are a shade dearer than we quote. It is stated, however, that mills are all crowded with work, so that no large amount of business could be taken without causing an immediate and rapid advance in foreign quotations. It is not improbable that some of the American mills may have purchased material in Glasgow to cover unfilled portions of their foreign contracts, which would be much cheaper than to make shipments from Pittsburgh or Chicago, at which points, it is said, there are some important outstanding contracts. Some very large sales were made when prices were 1.25c. to 1.50c., but there is no evidence to show that anything near the quantity has been shipped that was reported sold. Whatever may be the true inwardness of the matter, it is sufficient to set people thinking, and it is a fair warning that higher prices will not only lead to excessive production on this side, but may again lead to an invasion of our markets by European producers.

Pig Iron.—Prices are higher than they were a week ago and supplies are believed to be smaller than ever.

It is difficult to quote exact prices, because many diverse elements have to be taken into consideration before a seller names his figure. For instance, a customer who is just finishing up a \$10, \$11 or \$12 contract cannot expect to be let in again at extreme inside prices, while one who has paid an advance month by month without having any at very low figures will certainly not be squeezed very hard, consequently while one may get a little Iron at, say, \$19.25 to \$19.50 for No. 2 X, others may have to pay very close to \$20.50 so as to even things up. There is also another feature—viz., that in times like these a buyer has got to stick pretty close to his regular shop. Pig Iron sellers are doing their best to serve their legitimate customers, and in many instances are making sacrifices to do so rather than sell to outsiders, although they are frequently willing to pay more money to secure guaranteed deliveries. The course of the market in the near future is a little uncertain. At present there is such an undoubted scarcity that prices look like going higher, but if there should be (as some think there may be) a falling off in the demand, it would not take much to put prices back \$1 or \$2 per ton. As we said before, there is no probability of anything of the kind just now, but the supply is gradually increasing, and it will soon be felt if the demand slackens. Prices at this writing are about as follows for seaboard or nearby deliveries: No. 1 X Foundry, \$20.50 to \$21; No. 2 X Foundry, \$19.50 to \$20.50; No. 2 Plain, \$19 to \$19.25; Standard Mill Iron, \$18 to \$18.25; Basic (nominal), \$19.50 to \$20; Bessemer, \$20 to \$21.

Billets.—There is no business of any account, prices being too high for immediate consideration, \$34.50 to \$35 being the nominal quotation.

Muck Bars.—There are sellers at \$40, but buyers talk \$35 to \$36 as all they are willing to pay under present conditions.

Plates.—The demand keeps up to the full capacity of the mills and prices are as firm as a rock. The demand is from a diversity of sources, as well as for a diversity of purposes, but has been specially noticeable as coming from the West and Northwest. A considerable amount of business has been entered for these points, which, with a steady demand from local sources, keeps the mills crowded with work. Prices are firm at the following figures for seaboard or nearby deliveries—viz., for carload lots and upward, 2.60c. to 2.70c. for $\frac{1}{4}$ -inch and thicker; Shell, 2.75c. to 2.80c.; Flange, 2.90c.; Fire Box, 2.95c. to 3c.

Structural Material.—The advance in prices of \$5 per ton had been pretty well discounted on last month's business, so that new quotations are a matter of form more than a matter of fact. The demand is very heavy and price seems to have no effect, so far as it concerns the placing of new orders. Mills are crowded with work and quotations for deliveries at seaboard or nearby points are as follows: Beams and Channels, 2.15c. to 2.25c.; Angles, 2.15c. to 2.40c.; Tees, 2.20c. to 2.25c.; Deck Beams and Bulb Angles, 2.40c. to 2.50c.

Bars.—There is no change in this department. Orders are abundant and mills so fully employed that they are not in a position to meet additional requirements from buyers, except in limited amounts. Prices are very firm, but not materially different to what they have been during the past two or three weeks—viz., for deliveries at seaboard or nearby points: Ordinary Bars, 1.90c. to 1.95c.; Refined Bars, 2c. to 2.10c.; Test Bars, 2c. to 2.20c.; Steel Bars, 2.10c. to 2.15c.

Sheets.—The demand is very active and prices manifest a hardening tendency. Mills are all running to their fullest capacity, but find it difficult to keep up with the demand. Prices for best Sheets are as follows (common Sheets two-tenths less): No. 10, 3c.; No. 14, 3.10c.; No. 16, 3.20c.; Nos. 18-20, 3.30c.; Nos. 21-24, 3.40c.; Nos. 26, 27, 3.50c.; No. 28, 3.60c.

Old Material.—Prices are improving, although the market is still somewhat irregular. Sales of Wrought Turnings at \$12.75; Ordinary Wrought Scrap, \$16 to \$17; Heavy Steel Scrap, \$15.50; Old Steel Rails, \$16; Iron Rails, \$20 to \$21, with bids and offers as follows for deliveries in buyers' yards: Cast Borings, \$11 to \$11.25; Wrought Turnings, \$12.50 to \$12.75; Machinery Cast, \$13.50 to \$14.25; Old Car Wheels, \$16 to \$16.50; Heavy Steel Scrap, \$15.50; Steel Rails, \$16; Iron Rails, \$20 to \$21; No. 1 Railway Scrap, \$19.50 to \$20.50; Iron Axles, \$23 to \$25; Steel Axles, \$17 to \$17.50.

The Manning improved rail, invented by W. T. Manning, formerly chief engineer of the Baltimore & Ohio Railroad, is about to be submitted to practical tests on that road. The first consignment of the rails is now being used to replace portions of the tracks along the B. & O. at the most pronounced curves and heavy grades.

Cleveland.

CLEVELAND, OHIO, July 11, 1899.

Iron Ore.—Facts as evidenced by reports of the movement of Iron Ore up till July 1 bear out the predictions freely made that it would surpass any previous accomplishment in the history of the industry. The remarkable feature of the whole situation is that despite this showing freight rates for the movement of the Ore from upper lake ports to Lake Erie have remained at practically the top notch figures reached last week—a rate which many shippers have been maintaining for several years past would never again be reached in this age of deep channels and large freight carrying vessels. It is true the June movement of Ore has not reached the 3,000,000-ton mark which had been anticipated in some quarters, but it is near enough to exercise little appreciable influence upon the situation. The figures of the Iron Ore Dealers' Association, the headquarters of which are in this city, give the June shipments as 2,622,894 gross tons, as against 2,278,134 tons for the corresponding period a year ago, and a total from the opening of navigation to July 1 of 4,742,961 tons, as against 4,612,173 tons on July 1, 1898. This increase of more than 100,000 tons, despite a late opening of navigation, strikes and other retarding influences, is significant. There is no doubt that 15,000,000 or even 16,000,000 tons of Ore could be moved during the season were it only possible to get the necessary force of men at the mines. There is small prospect, however, that this will be accomplished, although high wages and every possible inducement is being offered to secure men. There is no doubt, however, that some of the fault lies with the vessel end of the line of transportation. At least the officials having to do with the movement of Ore from the mines to the head of the lakes assert that they could have made a much better showing had the requisite vessel tonnage been available. The Missabe road is ahead of last year's shipments; the Duluth & Iron Range has hauled 644,000 tons of Ore to Two Harbors, which places the record of the road 150,000 tons beyond last season, and means, moreover, that it can henceforth handle fully 700,000 tons per month; finally the Eastern road is proportionately in excess of the Ore movement up to the same date a year ago. The three roads hauled 350,000 tons more than to July 1, 1898, and their capacity for the remainder of the season is virtually dependent only on the amount of Ore mined and the supply of vessel tonnage available. During the month of June there was moved through the Sault Ste. Marie canal 2,298,281 tons of Ore, which, as in the case of all other statistics, is a heavy increase over last season. The vessel market is naturally in the best of shape. Grain shippers at the head of the lakes are taking all the tonnage offered, and the supply of Ore carriers is therefore by no means liberal. Rates are firm at 90c. from the head of Lake Superior, 80c. from Marquette, and 75c. from Escanaba to Ohio ports. During the past week \$1 was paid on cargoes from the head of Lake Superior, but boats were also had at 90c., and this must stand as the rate. Rates will doubtless hold steady now for some time. No sales of Ore have been reported.

Pig Iron.—The market is, if possible, firmer than ever, and a slight stiffening of prices has resulted. Sales of Bessemer Iron have been made by parties outside the association during the week at \$20.75, Pittsburgh. Quite a few sales of Foundry Irons, in lots ranging as high as 1000 tons, have been made for delivery during the first half of next year. For this delivery the majority of sellers have accepted \$19.50 for No. 1 and \$19 for No. 2, although in some cases \$20 has been quoted for No. 1. Foundry Irons of either grade for immediate delivery, or, indeed, for delivery any time during the remainder of the year, would bring \$20 easily. The impression seems to be spreading that prevailing prices will continue for some time to come, and there is manifest a growing disposition on the part of buyers to provide to as great an extent as possible for their demands during the first six months of the coming year. Sales, of course, fell off to some extent during the past week, as was to be expected in view of the advent of a holiday, but it did not nearly reach the proportions which had been anticipated in some quarters. Lake Superior Charcoal continues to be practically unobtainable, but a nominal quotation of \$20.50 on Lake Erie dock continues to be made. In the case of Gray Forge, the situation is slightly easier, but some sales have been reported at \$17.50, which is an advance of 50c. over last week's quotation. The increase in the capacity of the Lorain Steel Company's plant at Lorain, Ohio, will soon be a reality. Furnace No. 1, which has been in course of erection for more than a year past, has gone into blast and will show a capacity of 500 tons daily. It will be followed in a few weeks by Furnace No. 2. The new blooming mill will also be ready for operation within a short time.

Finished Material.—The transactions of the past week have been fewer than usual and of little general

interest. The order mail and the volume of inquiry have both fallen off, but a general stiffening of prices all along the line has nevertheless been manifest. Bar Iron is selling out of stock at 2c. and Steel Bars at 2.40c. Pipe is quoted at 50 and two 10's for car lots and 50 for less than car lots. No. 27 Sheets are 3.20c. out of stock, and other grades are listed at proportionate prices. Beams and Channels, Angles, Tees and Zees all show an advance of \$5 per ton, but it seems to be well taken. The demand for Plate and Rails has dwindled to practically nothing, for the reason that no delivery can be offered. In Structural Material the only sale reported during the week is of 100 tons for local building work.

Birmingham.

BIRMINGHAM, ALA., July 10, 1899.

As foreshadowed in last letter, the demand has been only moderate for Iron, the situation being practically unchanged. There was no cessation of small orders, but a fair amount of them had to be passed for the same reason heretofore given—inability to supply them. Sellers seem to be satisfied with current values, and while \$14.50 has been accepted for No. 2 Foundry for long delivery, thus indicating that current values are acceptable to sellers, the fact remains that for spot and nearby delivery this price is below that obtained. The market is flexible and variable. One price is paid by one for one grade, while for another grade a price obtains in which the usual difference is not considered. For No. 1 Foundry \$15.50 is quoted. For Gray Forge \$13 still holds, and for No. 3 Foundry \$14. With spot Iron so scarce and bringing top prices, and long deliveries not now so keenly sought for and consequently easier in tone, it is a hard matter to accurately diagnose the market or give actual prices. Some export demand has sprung up, and sales of several thousand tons were reported at prices based on current domestic values. Some of it went to the Continent and some of it to Great Britain. Probably 10,000 tons will cover the sales to this interest in the last two weeks.

The press report from Cincinnati to the effect that the Steel plant had recently sold 15,000 tons of Steel Billets for September, October and November delivery is not confirmed by the officials. It is stated that there has been but one round lot sale, and that went to the Pittsburgh district, as reported to you at the time it occurred. Until within the past week there has been no further sale. Last week one order was accepted for 500 tons for February delivery at \$29, f.o.b. Birmingham. At present they are not making rapid progress on the Steel plant. Delays in receipt of both material and machinery have interfered with progress of work and have upset all calculations as to time of completion. The Bar and Rod mill has had the same difficulties to encounter, and it, too, has been seriously delayed in progress of erection. But as each declares it will be ready before the other the rivalry will spur them to extra exertions.

The rolling mill affairs, in so far as court is concerned, have reached a conclusion. The upset price for the property has been paid, amounting to \$275,000. The inventory and quick assets, which figure up to approximately \$460,000, added to this will foot up a sum large enough to wipe out all indebtedness and come near paying the stockholders dollar for dollar. The conclusion of court proceedings was reached late Saturday, and we may expect this week some announcement of the policy from the new owners.

The style of the corporation that was reported last week as having acquired the Clifton Furnaces at Ironaton, the Gadsden Furnace, the Standard Coal Company and other properties is the Alabama Coal & Iron Company. They announce that contracts are being let for the enlargement of three furnaces and for trebling of the Coal and Coke output, and the work of improvements on the furnaces and Coke ovens will be completed in four months. The aggregated furnace output will be 180,000 tons and the Coal output 2000 tons daily. The properties are to be paid for in full, the enlargements and improvements are provided for, and the company commence without indebtedness of any kind and with ample cash capital. No bonds are to be issued. They claim that the experts' reports confirm their declaration that the cost of making Iron will be as low to them as to any engaged in the trade. There is yet another combination of similar interests, in the embryotic state, about which nothing definite can yet be said. They, too, have fine properties that they desire to combine into one interest.

For some time past it has been known to your correspondent that a movement was on foot looking to the resumption of operations on the part of the suspended Baxter Stove Works. Nothing definite was concluded until the close of the past week, when a positive understanding was arrived at. The works will be reopened and greatly enlarged, and will employ 1000 to 1200 hands. There is ample capital behind it to insure no discomfort on that score, and the interested parties are known in the

business and financial world as eminent successes. This week the scheme will probably be made public. Besides this important addition comes the information that the establishment of a large Nut and Bolt works at Ensley City is taking definite shape. The Bates Metal Company, doing business also as a brass foundry, have commenced the erection of a foundry 40 x 170 feet at Avondale. The investment here of so much outside capital and the continued investigation of the opportunities left have increased confidence in local holders of properties, and the "pick ups" of a year ago have long since been absorbed. An Eastern corporation two years ago made a five-year 7 per cent. interest loan on a piece of business property to improve which the loan was wanted. A sale of the property was made a short time since to the profit of the owner, and application was made for release of mortgage on loan. The answer came promptly, "No sir! We are satisfied to let the loan remain." The buyer having idle money did not care to pay interest for three years on the loan and the trade fell through.

The vastly improved business conditions are at last reflected by the market value of the bank stocks. Lately there has been an average advance of 25 per cent., with more desire to buy than when they were lower.

(By Telegraph.)

Iron market continues firm, with a further advance in some grades, especially in Basic Gray Forge and No. 3 Foundry.

St. Louis. (By Telegraph.)

Office of The Iron Age, 512 Commercial Building, St. Louis, July 12, 1899.

Pig Iron.—Sales have slackened up this week and a visit to Missouri River points developed the intention of foundrymen to exhaust present stock before buying further. Not a few concerns are now so expressing themselves, but perhaps they will change their plans when it occurs to them that prices will be boosted up when a greater number of buyers do come into the market. No weakening is seen on any hand among furnaces, and it is freely expressed that higher prices will be named as the year ages. We quote for cash, f.o.b. St. Louis, as follows:

Southern No. 1 Foundry.....	\$19.25 to \$19.50
Southern No. 2 Foundry.....	18.75 to 19.00
Southern No. 3 Foundry.....	17.75 to 18.00
No. 1 Soft.....	19.25 to 19.50
No. 2 Soft.....	18.75 to 19.00
Gray Forge.....	16.75 to 17.00
Mottled.....	16.25 to 16.50

Bar Iron.—Jobbers' selling prices range from 2.15c. to 2.25c., base, full extras, and the new advance of 10c. per 100 lbs. for cutting to tire size is being strictly observed. June sales exceeded the tonnage for the same month last year and this July is also running ahead. Dealers in the backwoods, who say they have not time to read trade papers, are complaining at the higher prices asked for material, and instances have occurred where it was threatened that shipments would be returned unless credits were allowed. Orders are coming from concerns jobbers long lost sight of for various reasons, and past differences are forgotten in the press for certain sizes. Mills quote Bar Iron at 1.90c., base, East St. Louis, and Bar Steel at 2.15c.

Rails and Track Supplies.—Makers quote a new price on Splice Bars. Quotations on other supplies remain unchanged. We quote as follows: Splice Bars, 3c.; Track Bolts, with Square Nuts, 3c.; with Hexagon Nuts, 3.15c.; Spikes, 2.25c. to 2.50c.; Iron and Steel Links and Pins, 2.20c.

Pig Lead.—Considerable strength is seen and sellers stand firm on basis of sale made to-day. About six cars of Soft sold at 4.45c. and six cars of Chemical brought 4.50c. Buyers are slow to take Lead at these figures, but sales have been more active than in some time past. A further increase is looked for by those familiar with the trade. The recent trouble at Western mines has had an influence in putting up the market, but the demand will doubtless maintain present figures at least. Lead Ore continues to sell at \$26 per 1000 lbs.

Spelter.—Prices are returning to the position held a month or so ago. Actual sales of 80 tons were made at 5.90c. and the same interest refused an additional order at that figure. The market is exceedingly strong, and while 5.85c. is bid on 'change, none can be picked up at that figure.

Zinc Ore.—The situation seems less strained than before the shut down by the miners. Bins are said to be well cleaned of stock Ore, and mines have again resumed operations, with the basing price of \$43 per ton on 60 per cent. Assay Ore unchanged. The top price paid for such Ore as was to be had last week was \$43 per ton.

The Republic Iron & Steel Company, St. Louis branch, have removed from their old quarters, the

American Central Building, to a handsome suite of offices in the new Mermod-Jaccard Building.

The American Steel Hoop Company have taken a suite of rooms in the Fullerton Building, St. Louis. Business in the St. Louis district will be looked after by this branch.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, {
PITTSBURGH, July 12, 1899. }

(By Telegraph.)

Pig Iron.—The six furnaces at Sharpsville have been idle since July 1, taking about 1200 tons of Iron daily out of the market, which has emphasized the shortage of Pig Iron. The strike at these furnaces will be settled this week and the furnaces started up. The market is very strong, and while there are no large inquiries, there is very little Iron available. The price of Bessemer Pig is all of \$20 at Valley furnace, while higher prices have been quoted for spot delivery. Gray Forge is also higher, and is held at \$17 to \$17.25. Valley furnace. Sales have been made at about \$17.50, Pittsburgh. Foundry Iron is scarce, and No. 2 has sold at \$18.50, delivered in Pittsburgh district. We quote Gray Forge at \$17 to \$17.25; Bessemer, \$20, both at Valley furnace; No. 2 Foundry, \$18.50; Gray Forge, \$17.50; Bessemer, \$20.75, all f.o.b. Pittsburgh. We note sales of about 10,000 tons of Bessemer, made principally by dealers, at \$20.75, Pittsburgh; also a sale of 400 tons of No. 2 Foundry at \$18.50, Pittsburgh.

Steel.—There is a good demand for Bessemer Slabs, and as high as \$34, Pittsburgh, has been offered by buyers. Rod Billets can be had at lower prices; Acid Open Hearth Billets have been quoted above \$39, Pittsburgh, while Open Hearth Slabs have sold at about \$43, Pittsburgh. None of the mills in the Pittsburgh district are selling any Steel of any account.

Sheet Bars.—The market is strong, and prices are close to \$35, maker's mill. A sale of 1000 tons is reported at about \$36, with an 85c. freight allowance.

Spelter.—The price of Spelter is steadily climbing, and prime Western grades are quoted this morning at 6c., Pittsburgh, for July and August delivery.

Sheets.—The Sheet market is very strong, and prices are higher. Leading mills are quoting No. 27 at 3c., No. 28 at 3.05c. to 3.10c. for box annealed, one pass through cold rolls. Galvanized Sheets are also higher, and 75 per cent. in carload lots 15c. freight allowance is being quoted.

(By Mail.)

Demand so far in July has fallen off considerably, owing to stock taking and usual summer shut down. The mills, however, are filled up with tonnage so far ahead that the slight falling off in demand is hardly noticeable. About the only change in prices during the week was the advance of \$5 a ton on Structural Shapes. It is evident that shut downs this summer will be brief as possible and repairs will be postponed where feasible. Prices all along the line are as firm as they have been at any time, and nowhere is there any sign of weakening. Bessemer Pig Iron is quiet and small lots are selling at \$20, Valley. There is a good deal of inquiry for Steel, but very little to be had. From \$32 to \$33 for Bessemer, and \$42 to \$43 for Basic Billets is being paid. Finished material is very strong, but with the exception of Shapes, unchanged in price.

Ferromanganese.—The local producer continues to quote 80 per cent Ferro at \$85 in carload lots. Small lots of foreign Ferro, for prompt shipment, have sold at \$100 a ton in this market.

Structural Material.—On Friday, July 7, at 2 p.m., prices on all kinds of Structural Material were advanced \$5 a ton, making an advance of about \$15 a ton since the first of the year. The Quebec bridge, involving a large tonnage, is understood to have been placed in Pittsburgh. Both local mills are crowded with tonnage, and sold up for fully four months ahead. We quote Beams and Channels, 15-inch and under, 2c.; 18, 20 and 24-inch, 2.10c.; Angles, 3-inch and up to 6 x 6 inch, 2c.; Angles under 3 inches, prices on which are not controlled by the Beam pool, are 2.15c. to 2.25c.; Tees, 3 inches and larger, 2.05c.; Tees, under 3 inches, 2.20c. to 2.30c.; Zees, 3 inches

and larger, 2c.; Bulb Angles and Deck Beams, 2.30c.; Grooved Rolled Plates, 2.25c., all f.o.b., Pittsburgh.

Plates.—Demand for Plates is heavy and deliveries as hard as ever to get. Jones & Laughlins are now rolling up to 90 inches wide in their Soho mill. Prices depend largely upon the order and deliveries wanted. We quote: Tank, 1/4-inch and heavier, 2.40c. to 2.50c.; Shell, 2.50c.; Flange, 2.60c.; Marine, 2.75c.; Medium Fire Box, 2.75c.; Best Fire Box, 3.25c. to 3.50c., at mill; for prompt deliveries of universal and Sheared Plates, from 2.60c. up to 2.95c., at mill, has been paid.

Merchant Steel.—Demand so far in July has been light, owing to stock taking and regular summer dullness. The mills, however, are filled up for the next three or four months. Prices are strong and we quote: Toe Calk, 2.75c.; Open Hearth Tire, Machine Straightened, 2.75c.; Machinery Steel, Soft, 2.75c.; Hard, 3c.; Common Spring Steel, 3c.; Crucible Analysis, 3.50c.; Tire Steel, 2.40c.; Plow Slabs, Bessemer, 2.75c.; Open Hearth, 3c.; Sleigh Shoe, 2.75c.; Cutter Shoes, Tapered and Bent, 3.75c.; Crow Bars, Pinch and Wedge Point, 3.50c.; Lay Steel Rolled, 4c.; Hammered, 5c.; Tool Steel, 6.50c. up to 14c., according to grade. In regard to terms, we can state that most mills now sell at 30 days, net, while other mills allow 60 days, or 2 per cent. off for cash in 10 days, from date of invoice.

Bars.—The demand for both Iron and Steel Bars is very heavy. Agricultural implement makers have recently placed large contracts and at full prices. These contracts are only for a portion of their requirements, and additional contracts will be placed later on. Prices on Common Iron Bars are higher, and we quote at 1.85c. to 1.90c., half extras, at Valley mill. We quote Iron Bars, made from all Muck Bar stock, at 2c. to 2.10c., at mill. Prices on Steel Bars are very strong and mills now sell 30 days, net. We quote Steel Bars, random lengths, 2c.; cut to lengths, 2.05c., half extras, net 30 days.

Sheets.—There is a good demand for Black and Galvanized Sheets and some of the mills are practically sold up for balance of this year. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 2.85c. to 2.90c.; No. 28, 2.90c. to 3c. As noted last week, jobbers in certain sections who have stocks of Sheets bought at lower figures are shading these prices. The market on Galvanized Sheets is strong and we quote in large lots at 70 and 10, with 15c. freight.

Rails.—We quote light and heavy sections at \$28 to \$30, Pittsburgh.

Skelp.—Skelp continues very scarce, and prompt deliveries can hardly be had at any price. We quote Iron and Steel Grooved Skelp at 2.15c. to 2.25c., depending on the size and delivery wanted, and Sheared Iron and Steel Skelp, at 2.35c. to 2.50c., delivered f.o.b., Pittsburgh. As noted last week, the sizes called for in the order and deliveries wanted by customer largely determine the price.

Pipes and Tubes.—The National Tube Company have taken formal possession of the different Pipe concerns. We can report a very active demand for Merchant Pipe, with several of the leading mills practically out of the market as sellers. We quote Merchant Pipe at 50 and two 10's in less than carloads, maker's mill, and 50 and two 10's and 5 per cent., delivered. The quotation of 60 and two 10's on Merchant Pipe in this report last week was a typographical error. Demand for Casing is heavy, and we quote Screw and Socket Joint, 3 3/4-inch and larger, 40 per cent.; Inserted Joint, 35 per cent., with an extra 5 per cent. to dealers. Demand for Boiler Tubes is the heaviest ever known and it is predicted that there will be a considerable shortage before the year is out. We quote: 1 1/4 to 1 1/2 inch Iron and Steel, 40 per cent. off list; 1 3/4 to 2 1/2 inch, Iron, 50 per cent.; Steel, 55 per cent.; 2 3/4-inch and larger, Iron, 55 per cent.; Steel, 57 1/2 per cent., with an extra 5 per cent. to dealers. On carload lots freight is allowed, and on less than carload lots prices are f.o.b., maker's mill.

Connellsville Coke.—Demand for Coke is very large and the output and shipments from the Connellsville region are larger than ever before in the history of the Coke trade. Last week, out of 18,711 ovens in the region, 17,555 were active and only 1156 idle. The H. C. Frick Coke Company have started up 40 new ovens at the Cuyahoga plant. This concern shipped in June 31,256 cars of Coke. We quote strictly Connellsville Furnace Coke at \$2.15 to \$2.25 and Foundry Coke at \$2.15 to dealers and \$2.30 to consumers, in tons of 2000 lbs., at oven.

The offices of J. B. Booth & Co., Iron and Steel brokers and dealers in Structural Material, have been removed from First National Bank Building to Rooms 203-204, German National Bank Building, Pittsburgh.

Cincinnati. (By Telegraph.)

Office of *The Iron Age*, Fifth and Main streets, {
CINCINNATI, July 12, 1899. }

The past week was simply a renewed edition of the weeks which have just passed. All that can be said about a strong market with advancing values aptly applies to the present conditions. Buyers and sellers alike seem to have settled into the conviction that present prices are as low as will prevail for some time to come. Contracts are being made for delivery until July, 1900, and but little trouble is being experienced in closing trades at full prices. When it comes to nearby delivery the question is simply of ability to produce the iron. Quotations show another general advance, with Soft Irons scarce and proportionately stronger than the general list. The volume of business actually booked and the inquiry indicate a very normal state of trade under present conditions. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$18.25 to \$18.75
Southern Coke, No. 2.....	17.75 to 18.00
Southern Coke, No. 3.....	17.25 to 17.75
Southern Coke, No. 1 Soft.....	18.25 to 18.75
Southern Coke, No. 2 Soft.....	17.75 to 18.00
Southern Coke, Gray Forge.....	16.00 to 16.25
Southern Coke, Mottled.....	23.00 to 24.00
Ohio Silvery, No. 1.....	23.00 to 24.00
Ohio Silvery, No. 2.....	21.50 to 22.50
Lake Superior Coke, No. 1.....	19.00 to 19.50
Lake Superior Coke, No. 2.....	18.50 to 19.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$18.50 to \$19.50
Lake Superior Car Wheel and Malleable.....	21.50 to 22.50

Plates and Bars.—No change reported in general conditions. Business is excellent, with a very strong price-list. We quote, f.o.b. Cincinnati: Bars, wholesale, 2c. with half extras, 2.15c. with full extras; Bar Angles, 2.30c. for $\frac{1}{2}$ -inch and larger; Sheets, No. 10, 2.95c.; No. 27, 3.35c.; Plates, 2.60c. to 2.75c.

Old Materials.—Market strong. A normal volume of trade. We quote, f.o.b. Cincinnati: No. 1 Wrought Iron Railroad Scrap, \$16 to \$16.50; Cast Scrap, \$11 to \$12; Axles, \$20 to \$21; Iron Rails, \$19 to \$20; Car Wheels, \$14.50 to \$15.

It is authoritatively announced that after August 15 next the Matthew Addy Company will become sole selling agents for the Tennessee Coal, Iron & Railroad Company in the United States, with the exception of the State of Alabama, which the company will handle from their own office. Rogers, Brown & Co., who have hitherto divided the territory with the Matthew Addy Company, are understood to have arranged for other Southern furnaces, which they will make public within the next week.

The Belgian Iron Market.

BRUSSELS, June 28, 1899.

Since my last report a complete change has come over the metallurgical industry in Belgium, whose situation has now become splendid. Belgium reflects events in competing countries of Europe—Germany, France and England. It is particularly the latter which is our great regulator. Until a month ago affairs were only in moderately good position in England, and our market therefore showed little animation. Since then, however, everything has changed in England as well as here, and we are prospering to a degree which we have not known for many years. Prices are rising from day to day. Rolling mills not caring particularly to enter into long time engagements under such conditions, are quoting higher and higher prices, hoping that customers will not accept them. The latter, however, promptly do so, by wire.

It should be observed that above all it is the demand for the interior of our country which is bountiful, since the exports for the first five months of 1899 have not been notably larger than those of 1898. The Belgian demand, however, is extraordinarily heavy. This is due partly to the real increase in requirements, and on the other part to the fact that England, Germany and France, who compete in this country, are not sending anything, on account of their own prosperity. There is an extraordinary activity in construction shops, who are overloaded with orders. The result is that nearly every day new shops for different specialties are being organized. Even English firms have begun to establish plants in Belgium, and at this time several are being built at Liège and in the Province of Charleroi. It should be observed that though the exports are not increasing, this is not due to the fact that there is no demand from that quarter. On the contrary. But the works prefer to deliver to customers in this country, in which there is greater security as to payments. Belgian concerns do not furnish foreign customers unless they are forced to do so. At this time exporters are urging the rolling mills to sell, and are offering prices equal to those paid at

home. Producers, however, are giving them as little as possible.

The situation of our Iron industry would be altogether ideal if there were not considerable trouble over the extreme scarcity and consequently the rising prices in raw materials, notably in Coke and in Coal. Coke is so scarce that a number of the blast furnaces in Belgium, in Luxemburg and France, and in Germany, cannot be blown in. Efforts are being made to bring Coking Coals from England, but the price is very high. So far as rolling mill Coal is concerned, prices have now advanced 25 per cent. since April 1, and the collieries cannot furnish the quantities demanded by their customers. The latter are drawing as much as possible from France, Germany, and, above all, from England, but are paying high prices for it. The scarcity of Coke has led to a scarcity of Pig Iron. The furnaces having been forced by the Belgian Coke Syndicate to contract for the whole of next year, have, in their turn, forced buyers of Pig Iron to contract for the whole of 1900.

The scarcity of Pig Iron has led to an eager search for Old Iron and Steel, which has advanced to fantastic prices, particularly since both German and French works have picked up as much as they possibly could in Belgium and in Holland. The result has been that recently at a popular letting, Old Iron and Steel Rails were paid for at higher prices than New Rails might have been bought for only a short time ago. Thus 91.76 francs has been paid for Old Steel Rails, while New Steel Rails have been sold at 90 francs. Old Iron Rails have fetched 111.73 francs, when New Beams were only recently quoted at 95 francs. During the period of a year Old Material has advanced 40 per cent. for Iron and 30 per cent. for Steel. Steel Blooms and Billets are even scarcer still. There are none for sale, since those Belgian works which produce them are converting them themselves, and since foreign works are not shipping anything and refuse to enter into negotiations for the future. This scarcity will force Belgian mills to return temporarily to the puddling of Iron.

The following figures show the recent movement in prices:

	June 26, 1899.	May 26, 1899.	June 26, 1898.
No. 3 Luxemburg Foundry Iron.....	85.00	72.00	56.00
Luxemburg Mill Iron.....	79.00	65.00	50.00
Charleroi Mill Iron.....	84.00	70.00	54.00
Thomas Pig.....	90.00	80.00	65.00
No. 2 Bars, f.o.b. Belgian Stations.....	180.00	165.00	132.50
No. 3 Bars, f.o.b. Belgian Stations.....	185.00	170.00	137.50
No. 2 Bars, f.o.b. Antwerp.....	177.50	160.00	125.00
No. 3 Bars, f.o.b. Antwerp.....	182.50	165.00	130.00
No. 2 Steel Beams, f.o.b. Belgian Stations.....	180.00	160.00	132.50
No. 2 Steel Beams, f.o.b. Antwerp.....	175.00	155.00	127.50
Angles, f.o.b. Belgian Stations.....	190.00	165.00	135.00
No. 2 Iron Plates, f.o.b. Antwerp.....	195.00	190.00	135.00
No. 3 Iron Plates, f.o.b. Antwerp.....	203.00	200.00	145.00
Steel Plates.....	210.00	195.00	145.00
Sheet Iron, f.o.b. Belgian Stations.....	225.00	220.00	160.00
Steel Rails, f.o.b. Antwerp.....	130.00	125.00	105.00

It will be observed that the rise has been very considerable. It should be noted, too, that while rolling mills until recently were willing to grant 2 and even 3 per cent. discount for payment in 30 days, they now refuse to give any discounts whatever.

The feeling is that a further rise is probable, and that within a week or two the base price of No. 2 Bars will be carried to 180 to 200 francs. The conviction is that the present prosperity will last at least until the end of the year 1900. We, therefore, have a year and a half of good times before us.

New York.

Office of *The Iron Age*, 232-238 William street, {
NEW YORK, July 12, 1899. }

Pig Iron.—A number of good orders have been placed for delivery during the closing months of the current year and the early months of 1900. The market continues very firm. Little has been done for export, the only transaction of consequence being the sale of one lot of 1500 tons for Liverpool delivery. We quote as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, \$20 to \$20.50; No. 2 X, \$19.25 to \$19.75; No. 2 Soft, \$18 to \$18.25; No. 2 Plain, \$18 to \$18.50, and Gray Forge, \$17 to \$17.25. Southern brands are quoted: No. 1 Foundry, \$19 to \$19.25; No. 2 Foundry, \$18 to \$18.25; No. 1 Soft, \$18.25 to \$18.50; No. 2, \$17.75 to \$18, and Gray Forge, \$16.75 to \$17.

Cast Iron Pipe.—The market is exceedingly strong, and there is a continued run of small orders. The shops are being pushed sharply for deliveries. Among the recent contracts we note one lot of 1000 tons for Lansingburgh, and one of 400 tons for Syracuse, which went at \$25.40 per net ton.

Steel Rails.—The order for the Elevated Road has been increased to 8500 tons, the Lackawanna Company having taken the contract. There is a good demand for

small lots, for which \$30 is obtained at Eastern mill. As illustrating the situation, it is worthy of note that seconds are selling at \$28 at mill.

Track Fastenings.—We quote Angle Bars 1.80c. to 1.85c.; Spikes, 1.90c. to 2c., and Bolts and Nuts, 2.30c. to 2.35c.

Finished Iron and Steel.—The event of the week has been the advance of \$5 per ton on the whole line of Structural Material. The leading mills have a very large aggregate of tonnage on their books, and the delays in deliveries are growing more and more serious. We quote as follows: Beams 2.15c. to 2.25c.; Angles, 1½ to 3 inch, 2.25c.; 3 to 6 inch, 2.15c.; Universal Mill Plates, 2.60c. to 2.65c.; Tees, 2.20c.; Channels, 2.15c. to 2.25c.; Steel Plates are 2.60c. to 2.65c. for Tank, 2.70c. to 2.80c. for Shell, 2.85c. to 2.90c. for Flange, 2.95c. to 3c. for Fire Box, 3c. to 3.10c. for Locomotive Fire Box, on dock. Refined Bars are 2.05c. to 2.10c. and Common Bars are 1.85c. to 1.90c., on dock. Soft Steel Bars, 2.10c. to 2.25c.; Steel Axles, 2.10c. to 2.25c.; Scrap Axles, 2c. to 2.20c.; Links and Pins, 1.90c. to 2c.; Hoops, 2.20c., at mill.

Metal Market.

Office of The Iron Age, 232-238 William street, {
NEW YORK, July 12, 1899. }

Pig Tin.—Since our last writing the daily closing prices in London were as follows: Thursday, £125 2s. 6d.; Friday, £127 17s. 6d.; Monday, £128; Tuesday, £126; Wednesday (to-day), £128 5s. These prices show a violent and rather erratic market. Surely there is sufficient evidence of manipulation and speculation. We have alluded previously to a new bull movement, which was inaugurated just about two weeks ago in London. On what this campaign is based we are unable to ascertain. The half yearly statistics which we give below do not warrant it. During the first week of this month London traded in about 3500 tons of futures, and in the three days of this week 3000 tons of futures were dealt in. These are enormous transactions. It seems that the London market is now playing in Tin in consequence of the fact that transactions in Copper are at a low ebb. The market here was affected, but was not active, notwithstanding that our own consuming capacity is about three times as great as that of England. The prices in our market during the week were as follows: Thursday, 27.70c.; Friday, 28.25c.; Monday, 28.10c.; Tuesday, 27.50c., and to-day entirely nominal at 27½c. to 28¼c. In fact, late on Monday sales were made as low as 27½c., and yesterday 27.30c., showing much lower than London parity. The total visible supply during the first six months of this year shows a decrease of 1363 tons, compared with a decrease of 6340 tons for the same period of last year, when the Straits supplies were practically the same. Below we give the total statistics for Europe and the United States, as compiled by the New York Metal Exchange, showing:

Total visible supply July 1, 1899.....	Tons. 18,768
Against—	
Total visible supply June 1, 1899.....	20,485
Total visible supply July 1, 1899.....	23,515

Copper.—Contrary to all expectations, this metal has taken a slight slump during the last week, and the tone of the market is without doubt a shade the weaker through it. Prices are held, however, at 18¼c. to 18½c. for Lake Superior Ingot. Electrolytic is quoted 17¼c. to 17½c., and casting stock is firm at 17½c. to 17¾c. The London market fluctuated slightly, and closed about the same as last week, with £77 2s. 6d. for spot and futures. Best Selected is quoted at £81, which tells of another 10 shillings advance. Exports throughout the first 11 days of this month were very light, and amounted only to 1399 tons.

Pig Lead.—This market is firm and the American Smelting & Refining Company have advanced prices five points further. The tendency is toward firmness, as the outlook for the settlement of the Colorado strike is not exceedingly bright. The A. S. & R. Company quote to-day 4.55c. to 4.60c., but in the trade these figures are looked upon as very low, and prices range between 4.57½c. and 4.62½c., according to quantity. St. Louis came at the close to-day with 4.52½c. bid and 4.45c. to 4.50c. asked. London remains practically unchanged with £14 6s. 3d.

Spelter—Is firmer and now quoted 6c. to 6¼c. for spot and futures alike. St. Louis is quoted 5.90c. at the close to-day, and London has advanced about 1 shilling 6 pence, coming to-day at £25 7s. 6d. The Ore market was quiet and prices held to \$43. All mines have resumed and it is expected that an increase of output will be experienced this week.

Antimony—Is without change in this market, and Hallett's remains firm at 10c., while Cookson's is still quoted at 11c.

Nickel.—There has been no change and the market continues firm. Canadian Nickel is quoted 38c. to 40c. for lots larger than 1000 lbs. and 40c. to 50c. for smaller quantities.

Tin Plate.—It is expected that an agreement will be reached between the Tin Plate company and their employees before the end of this week. In consequence of the shut down of all the works the American Tin Plate Company have withdrawn prices and are simply at a standstill. No sales are being made. The jobbers who have any stock on hand or deliveries due are taking advantage of the situation and they have advanced their prices about 35c. per box. It is needless to say, however, that consumers are buying no more than absolutely necessary under these conditions.

The New York Machinery Market.

Office of The Iron Age, 232-238 William street, {
NEW YORK, July 12, 1899. }

Interest in the street centered itself in operations of the Navy Department during the last week. These operations were just a little more interesting to machinery merchants this week than they usually are, because extra lubrication was applied to the purchasing mechanism. What was hailed as the first part of the contracts for the great Brooklyn machine shop was handed down from the Bureau of Steam Engineering via the Navy Pay Office of this city. There were about 40 machine tools in the lot, and it is estimated that the aggregate cost will exceed \$20,000. There were many good sized tools on the list, including lathes from 62-inch swing down to 32 inch; there was an 8-foot boring mill, several large planers, drill presses, shapers and radials. Owing to the fact that most of the tools are of the various types and classes which are at present very, very scarce, the deliveries will doubtless be rather protracted. Those tools on which a fairly good delivery can be obtained will be installed in a temporary shop. Work is progressing rapidly toward the erection of the main building, to be used as the machine shop proper, and the authorities expect that this building will be completed as soon as the various heavy tools are built. In building No. 190 at the Brooklyn Navy Yard there is now in operation a quantity of new tools of smaller sizes. This is the first temporary shop. These tools will, of course be transferred into the main shop as soon as it is completed. But besides this lot and those referred to above, the majority by far are still to be specified for. Bids for the 40 tools referred to above were opened on Monday last, but at this writing no awards have been made. Chief Engineer J. A. B. Smith of the Department of Steam Engineering is now considering the various proposals.

Specifications and proposal blanks are now being sent out for the machinery requisite in the construction of the central power station for the Brooklyn Navy Yard. The bids will be opened on August 8. The matter is in charge of A. S. Kenny, Paymaster-General, Bureau Supplies and Accounts, Navy Department, Washington, D. C. The equipment consists of three 400 horse-power boilers equipped with automatic stokers, two 600 horse-power engines, one 40-ton electric crane, one 25-ton electric crane and four 10-ton cranes, a 150-foot stack, ashes and coal conveying machinery, and feed and auxiliary pumps.

At the Equipment Department, building No. 7, Brooklyn Navy Yard, specifications are ready for almost \$100,000 worth of electrical appurtenances, hardware, small tools, gauges, surface plates, scrapers, &c.

Contracts were awarded by the Navy Department for new lighting plants to be installed on board the "Texas," "Montgomery" and "Marblehead." Blackall & Baldwin, 39 and 41 Cortlandt street, received a blanket contract for the entire work. This concern have sublet the contract for the electrical apparatus to the Crocker-Wheeler Company and the engine contract to Forbes & Co. There will be two sets of engines and generators installed on each ship.

Contracts for the engines for the proposed power station of the Manhattan Elevated Railway Company were awarded at a meeting of the Executive Committee yesterday. The contracts were awarded to the E. P. Allis Company of Milwaukee. There will be eight engines, each to be of 8000 rated horse-power. It is stated that the amount of the contracts approximates \$1,000,000. Seven of the largest engine builders in the country bid for the engines. The Allis bid was the lowest.

A. J. Larkin, Eastern representative of the E. P. Allis Company, with offices at 26 Cortlandt street, engineered the Allis end of the deal. The Allis Company, it will be remembered, also received the order for the engines now

being installed at the new Metropolitan station. At the meeting yesterday President George J. Gould made the report upon the contract to the Executive Committee and Russell Sage moved its adoption. It was unanimously approved. Mr. Sage stated that he was well pleased with the progress made toward the equipment of the road with electricity, and stated that the small locomotives of the present system would be disposed of to small railroads.

Orders for 4200 electric vehicles, aggregating \$8,000,000, have been placed with the Columbia Electric Vehicle Company of Hartford by the Electric Vehicle Company of this city. The former concern, it is said, have purchased the plant of the New Haven Carriage Company. Extensive additions will doubtless be made to these works to facilitate the fulfillment of the order just received.

It will be recalled that some months ago the Third Avenue Railroad Company awarded to the Westinghouse companies contracts for the equipment of the mammoth 216th street power house. These two concerns have also contracted for the construction and equipment of a 4000 horse-power temporary power station, which will be erected on East 129th street. The Westinghouse interests have received the contract for everything above the foundations. The Westinghouse Electric & Mfg. Company will, of course, furnish the electrical machinery, while Westinghouse, Church, Kerr & Co. will furnish all other material, acting also as engineers. The latter concern have sublet the boiler contract to Babcock & Wilcox. The boilers will be equipped with Roney stokers. They have also sublet the contract for the induced draft apparatus to the Buffalo Forge Company.

The contract for boilers, engines, centrifugal pumps and entire equipment for the sewage pumping plant to be constructed at Honolulu, H. I., has been awarded to the Prindle Pump Company, 120 Liberty street. This deal, which is a very large one, has just been consummated. Rudolph Hering, consulting engineer, acted for the Government in adopting the centrifugal pumping system.

The Pennsylvania Railroad are renovating their shops at Hoboken, N. J. The machinery is being connected to motors, the large tools having direct connection and the gangs of smaller tools are provided with a motor at the end of each line of shafting. New tools are being purchased. Blackall & Baldwin have received orders for 40 Crocker-Wheeler motors in connection with this work. This concern have also just received a contract for two 200-kilowatt generators, a 60-kilowatt booster, switchboard and other appliances, to be installed in a new street railway plant being built at Rochester, Mich.

At the New York office of the Brown Hoisting & Conveying Machine Company, 26 Cortlandt street, an order was received from the Philadelphia & Reading Railroad for two high speed gantry cranes, with cantilever extension, for unloading ships at the new pier at Port Richmond. These cranes will be similar to the Brown machine now in operation at Pier J, Pennsylvania Railroad, Jersey City.

Westinghouse, Church, Kerr & Co. were awarded a contract for a 600 horse-power Westinghouse compound engine by the Coney Island & Brooklyn Railway Company. This concern were also awarded a contract for three Westinghouse engines to be installed at temporary machine shops being erected by the Chinese Eastern Railway at Manchuria.

Through Manning, Maxwell & Moore the National Machinery Company, Tiffin, Ohio, secured an order for about \$15,000 worth of nut and bolt manufacturing machinery. The tools will be set up in the various shops which the Chinese Eastern Railway are erecting along their Trans-Siberian route. This machinery was ordered by Chief Engineer Kashevnikoff, who has during the last few weeks ordered about \$175,000 worth of machinery in this market.

It is stated in the trade that additions will be built to the power plant and machine shop of the Empire Mfg. Company, Lockport, N. Y.

The Keystone Paper Company, 429 Walnut street, Philadelphia, are said to be on the market for a 700 horse-power engine to replace the one destroyed in a recent fire.

The Buffalo Forge Company were awarded a contract for an induced draft plant to be installed at the plant of the People's Light & Power Company, Hoboken, N. J. This concern also received an order for a heating and ventilating system from the Ozark Cotton Mills, Gastonia, N. C. Orders were also received for fans and heaters for heating, ventilating and drying at the Delgado Mills, Wilmington, N. C., and a similar plant for the Société Parisienne des Blanchisseries and Chauffage Economiques, Paris, France.

The Duff Patents Company, Carnegie Building, Pittsburgh, Pa., at present have contracts for the building of

over 100 Duff gas producers. Thirty-five of these are for the American Steel & Wire Company, 14 to be built at Worcester, Mass., 14 at Cleveland and seven at the Shoenberger Steel Company Works in Pittsburgh.

The Boston Machinery Market.

Office of *The Iron Age*, 33 Mason Building, Boston, July 8, 1899.

There is only one verdict in this market regarding the situation and the outlook on machinery and machine tools of all kinds. All the representative houses report business extremely good and results satisfactory, not only in volume of transactions but in profits realized as well.

In construction work few new projects are contemplated this month, as far as can be learned, but the contractors are busy on previous orders, so that a steady consumption of iron and steel frame work and various kinds of stock entering into heavy building details is in progress. The Boston Elevated Railway Company continue to give the iron and steel business much to think and plan about, counsel for the road having appeared a short time ago before the harbor and land commissioners to obtain permission to carry out the projects under consideration for the Lincoln wharf property acquired recently. The company will spend about \$2,000,000 for a power plant on this site. Initial contracts have been placed, it is announced, with both the Westinghouse and General Electric concerns, each to furnish a 4000 horse power generator. These will be used side by side, and contracts for five additional ones will be placed later on the basis of results attained.

During the past week trials have been made of two widely different drawbridge systems here. The new bridge at Charlestown is about completed and the roll lift bridge of the Boston Terminal Company's approaches over Fort Point Channel near the Southern Union station is likewise fast approaching a finish. According to accounts from the engineers in both cases the results are very satisfactory. These two bridges are each the biggest of their respective types in the world. The Charlestown bridge is the pride of City Engineer Jackson of Boston and is operated by electricity, the plans for the machinery being largely of his personal designing. The Terminal Company's roll-lift bridge is from designs by J. C. Ostrup, recently in the employ of the Scherzer Bridge Company of Chicago, but now designing engineer for the Boston Elevated Railway Company.

Consolidation of the pump manufacturing concerns has brought about a number of removals in the Boston trade. The Deane Company's office has been selected as the place to be made headquarters for the Boston representation hereafter. The old office of the Knowles Pump Works and the Blake Mfg. Company has been given up by the consolidation and the Snow Company had joined forces with the Deane some time previous. The Worthington, it is understood, will soon be added to the Deane establishment. J. H. Houghton, Boston representative of the Lidgerwood Mfg. Company, takes the former office of the Blake and Knowles concerns, and the Ludlow Valve Company, heretofore occupying part of the office there, will remain in the same location. The Ingersoll-Sargent Drill Company accompany Mr. Houghton from his old stand to the new one, and the Harrison Safety Boiler Works, formerly in the Deane office, join the Houghton establishment.

Chandler & Farquhar have secured the contract for about \$25,000 of machinery and tools entering into the equipment of the Locomobile Company of America, who succeed the Stanley Dry Plate Company. This is the concern in which Editor Walker of the *Cosmopolitan Magazine* is interested. The motor carriage business continues to bring in lots of inquiries and some excellent orders for Boston houses. It is reported that the Mason Regulator Company are to increase their plant at Dorchester on account of orders for engines for an automobile concern placed recently.

Last month was the biggest in the history of the Boston office of the Niles Tool Works. Business is continuing good with the local representatives thus far in July and promises well, judging by inquiries in hand, for some time to come. They have installed within a short time some fine punching and shearing machinery in the Portsmouth Navy Yard. The automobile business brings trade to this house also and negotiations are under way for further business in that line.

Beaudry & Co., manufacturers of power hammers, report an excellent run of orders. Among recent shipments have been a 200 pound hammer to the Newport News Shipbuilding & Dry Dock Company and one of similar power to the J. I. Case Plow Company, Racine, Wis. They are now building a 500 pound hammer. A No. 7 duplex forging press is among the forwardings of the week, going to the Warwood Tool Company, Wheeling, W. Va.

Ventilating and heating apparatus is in excellent request this summer, the Walworth Construction & Supply Company being extremely busy in this line of work. They

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JULY 12, 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.
\$47,100,000	Am. S. & W., Common.....	55,960	55 -57	55½-56	55½-56½	53¾-55½	54½-56¾	55½-56¾
38,150,000	Am. S. & W., Pref. (7% Cu.)....	2,470	95¼-97½	95½-96	96	95½-96½	95½-96½	95½-96
9,250,000	Col. Fuel and Iron.....	15,450	44½-45	44 -46½	45½-47½	44 -45½	45½-46½	45½-46½
46,454,300	Federal Steel, Common.....	39,644	58½-59½	58 -59½	58½-59½	57½-58½	57½-59½	59 -61
53,253,500	Federal Steel, Pref. (6% Non-Cu.)	9,990	81½-81½	81 -81½	81 -82½	80 -81	80½-81	80½-81½
20,000,000	Tennessee Coal and Iron.....	72,100	66 -67½	66½-70½	69 -70½	67½-69½	67½-70½	69½-71½
7,974,550	Cambria Iron, Phila*.....	252	45	45 -45½	45	45	45	45
16,000,000	Cambria, Steel***.....	35,923	23 -24	23½-23½	23½-23½	22½-23½	23½-23½	23½-23½
5,000,000	Penna. Common, Phila.....	2,904	85 -86	85½-87	88 -89	88 -89	88	88
1,500,000	Penna. Pref., Phila.....	9				83		
28,000,000	Tin Plate Common, New York..	7,140	35½-37	36½-38	37½-38	36½-38	37 -37½	37 -38½
18,000,000	Tin Plate Pref., N. Y. (7% Cu.)	1,840	84 -85	85	85½	85	85½-86	87
28,000,000	Tin Plate Com., Chic.....	1,245	35½-36½	36½-38	37½-38			37 -38
18,000,000	Tin Plate Pref., Chic. (7% Cu.)	901	84 -85	85		85	85 -86	86 -86½
32,000,000	National Steel Common, Chic..	1,304		50 -51	50½-51½	50½-50½	50½-51	51½-52
27,000,000	National Steel Pref., Chic. (7% Cu)	740		90 -90½	90 -90½	90 -90½	90 -90½	90½-91½
32,000,000	National Steel, Common, N. Y..	6,335	50½-50½	50½-51	50½-51½	50 -50½	50 -50½	51½-52
27,000,000	Natl Steel, Pref., N. Y., (7% Cu.)	2,565	89½-90	90	90½	91½	91	90½-91½
7,500,000	Bethlehem Iron.....	3,555	61½-62	62 -63½	63 -64	63½	63 -63½	63½
	Bethlehem Steel Rights.....	4,774	23½-23½	23½-23½	23½-23½	22½-23½	22½-22½	23
12,500,000	Pressed Steel, Common.....	150		51			51½	
12,500,000	Pressed Steel, Pref. (7% Non-Cu.)	100						82½
19,000,000	Am. Steel Hoop, Common.....	3,050		28½	29 -29½	29 -29½	29	29½-29½
14,000,000	Am. Steel Hoop, Pref. (7% Cu.)	3,962	77 -77½	78½	78½-80	79	79½	79½-80
	Am. Car & Foundry, Common..	1,950	16½	16		15½-15½	15½-15½	15½-15½
	Am. Car & Foundry, Preferred.	2,169	60 -61½	60½	61	60	60½	60½-60½

* Par \$50. ** Par \$100 *** \$1.50 per share paid in. Late Philadelphia and Chicago sales by telegraph.

Bonded Indebtedness: Am. S. & W., \$730,000; Am. Tin Plate, none; Am. Steel Hoop, none; Federal Steel Co., \$13,200,000; Illinois 5%, \$7,417,000; E. J. E. R. R. 5%, \$1,600,000; Johnson 6%, \$3,732,000; D. & I. R. R. 5%, \$1,000,000; 2d D. & I. R. R. 6%, \$10,000; land grant D. & I. R. R. 5%; National Steel, \$2,561,000; Tennessee C. & I. R. R. Co., \$3,367,000; 6%, \$1,114,000; 7%, \$1,000,000; 7% cu. pref., Pennsylvania Steel, \$1,000,000; Steelton 1st, \$2,000,000; Sparrow's Point 1st, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000.

are putting in the piping at Seelye Hall, Smith College, at the present time, and have just finished the steam fittings for power plants of the Norfolk Western Street Railway Company at Medfield. An elaborate heating plant for the 30-room house of A. C. Burrage, on Commonwealth avenue, Boston, has been installed recently by this company also. At the Lancaster Mills also they have put in a plant and are just finishing a contract on work of special design, with a quantity of block tin pipe used in the outfit, for the Turner Center Dairy and Creamery Association at Auburn, Maine, where a Pasteurizing and disinfecting system is a part of the equipment and a refrigerating plant enters into the plans.

Owing to efforts that are under way to induce the Government to withdraw its objections to a drawless bridge between Boston and Cambridge to take the place of the old West Boston bridge, progress on the structure's plans has been delayed. The city of Cambridge, however, has decided to widen the approach to the bridge on that side of the river, and this means that the plant of Kendall & Sons, boiler makers, and that of the Roberts Iron Works adjacent will be encroached upon, necessitating the remodeling of the fronts of their buildings.

Two Boston concerns have suffered by fire recently, but are not extensive losers thereby. About a week ago a blaze was discovered in the building occupied by the Pratt & Whitney Company's Boston salesrooms and considerable damage was done to the upper stories. The machinery firm are on the street floor and their loss was mainly from smoke and water, with which the premises were flooded. They are open again for business, however, and will not be obliged to move while repairs are made on the building. Last Thursday a fire in the Wentworth Building on Sudbury street did about \$1500 worth of damage to the stock of S. L. Holt & Co., dealers in gas and gasoline engines and machinery.

The Tin Plate Wages.

(By Telegraph.)

CHICAGO, July 12, 1899.—The American Tin Plate Company and the Committee of the Amalgamated Association are still in session. Progress is reported, and the company hope for a settlement in a few days.

The Aetna-Standard Iron & Steel Company.—The National Steel Company have been appointed sales agents for the product of the Aetna-Standard Iron & Steel Company of Bridgeport, Ohio, for steel billets, slabs, sheet and tin plate bars and Bessemer pig iron. All inquiries should be addressed to the National Steel Company, Chicago, Ill. All inquiries embracing sheets, corrugated iron, galvanized iron, merchant bars, angles and other forms of finished material should be addressed to the Aetna-Standard Iron & Steel Company direct at the office in Bridgeport, Ohio, or to the regularly authorized sales agents, who are well known to the trade.

At the last directors' meeting of the American Steel & Wire Company, Alfred Clifford of St. Louis was elected a director in place of Fred. W. Voorhees, resigned.

Iron and Industrial Stocks.

During the current week the stock of the Tennessee Coal, Iron & Railroad Company has been the leader in the industrial group, the price advancing to 71¼. Nearly all the iron securities show gains, the American Steel preferred reaching 80.

At the close to-day the report gained currency that banking interests affiliated with the Federal Steel Company would arrange to buy the dividend on the common for its full face value on the date originally set for its payment.

	Bid.	Asked.
International Silver, common.....	12½	15
Otis Elevator, common.....	31	33
Otis Elevator, preferred.....	88½	89½
H. R. Worthington, common.....	50	55
H. R. Worthington, preferred.....	112	116
Cramp's Shipyard Stock.....	83	86
Pratt & Whitney, common.....	3½	5
Pratt & Whitney, preferred.....	38	43
E. W. Bliss, common.....	138	...
E. W. Bliss, preferred.....	125	...
U. S. Projectile.....	95	100
Barney & Smith Car, common.....	21	25
Barney & Smith Car, preferred.....	81	86
International Pump, common.....	21	23
International Pump, preferred.....	66½	67½
Republic Iron & Steel, common.....	17	18
Republic Iron & Steel, preferred.....	60	61½
Diamond Steel.....	7½	7½
Tidewater Steel.....	13½	13½
Warwick Iron & Steel.....	12½	12½
Park Steel Company.....	105	110

The Warwick Steel & Iron Company for June shows net earnings applicable to dividends of \$12,931. The company's output of pig iron was 5182 tons.

The Pressed Steel Car Company of Pittsburgh have declared the second regular quarterly dividend of 1¼ per cent. on the preferred stock of \$12,500,000, the dividend amounting to \$218,750.

The Daylight Prism Company have declared the regular quarterly dividend of 2 per cent. on the common stock, and a semi-annual dividend of 4 and of 2 per cent. extra on the preferred stock, payable July 31.

The Cambria Steel Company have declared a dividend of 60 cents per share, payable August 15 to stock of record July 31. Books remain open.

The American Tin Plate Company have declared their regular quarterly dividend of 1¼ per cent. on their preferred stock, payable July 29. Books close July 14.

The American Steel Hoop Company have declared their first quarterly dividend of 1¼ per cent. on their preferred stock, payable July 29. Books close July 14.

Two New Blast Furnaces.—The American Steel & Wire Company have decided to build two new blast furnaces, and plans are now being prepared. One of these will be located alongside their Edith Furnace in Allegheny, Pa., and the other beside their Central Furnaces at Cleveland, Ohio. The exact sizes of these new stacks have not been determined, but it is expected that each stack will have a daily capacity of 600 tons. Work will be commenced in a very short time.

HARDWARE.

Condition of Trade.

THERE is a perceptible falling off in the volume of orders received by manufacturers, which is owing to the withdrawal of travelers from the road and the cessation of active effort to secure business. The vacation season is also having its effect on business, and at the same time the attention of manufacturers whose works have, many of them, been pressed to the utmost is given to repairs, and, in some instances, to enlargements of plants. Others, however, are still occupied on orders. A good deal of attention is being given to preparations for the fall trade, which is expected to be of large volume. Difficulty in obtaining materials is experienced by many manufacturers and it is not unlikely that this is a matter which will cause a good deal of inconvenience. The demand for a good many lines of goods has been so heavy and the advances in the Iron market so marked that some manufacturers who were careless or negligent in covering their requirements for raw material have been placed in an unpleasant predicament and are loaded up with orders which they cannot fill without loss. There is a good deal of complaint that orders filled at low prices are not receiving the prompt attention that purchasers expected, the intimation being made that subsequent orders at higher prices are given prior execution. There are not many changes in price to be noted this week, and something of a lull is observable in the market, both in its upward tendency and in its transactions. The tone, however, continues very strong and it is to be expected that other advances on goods which have not been put up in price will gradually be announced. The cost of the raw material is such as to necessitate such action on the part of manufacturers. In a good many sections the stocks in the hands of jobbers are very heavy, and there is a disposition on their part to realize on goods in hand before buying more. Many jobbing houses are following the advances of manufacturers pretty closely, but in a great number of cases, especially to relatively careful and close buyers, they are making concessions and dividing more or less freely the advances which have been made. The outlook in Western trade centers is given in the dispatches given below, while the condition in the South is referred to in the following letter:

From Charles H. Wier.

To the Editor: Owing to large stocks of Hardware in the hands of jobbers the demand at present is very light, unusually so for the season, and the indications are that the demand will continue small, as the stocks of goods throughout the South are larger at this time than in any previous July.

Contracts for future wants have also been made, extending well into the season.

There is an increasing tendency on the part of the trade to limit their purchases to pressing necessities only, and to realize to the fullest extent possible on the goods purchased previous to the recent advances.

The continued increase in price of manufactures of

Steel and Iron is having a tendency to check purchases. The disparity in the price of cotton, agricultural products and Steel is so great that the consumers are compelled to limit their purchases accordingly.

Chicago.

(By Telegraph.)

The Shelf Hardware trade continues surprisingly active. It generally happens that trade is quiet after the Fourth of July, but this year is an exception. The volume of business continues so heavy that the absence of employees on vacations is greatly felt. One of the principal causes of the activity is the tremendous amount of building now going on all over the Northwest. This carries with it a demand for all kinds of Builders' Hardware, and at the same time makes a lively trade in mechanics' Tools. Other goods in the Hardware line are moving actively on account of the better financial condition of the masses of the people. This is the case, for instance, with all kinds of House Furnishing Goods. The demand for Staples has kept up remarkably well, being influenced, no doubt, by the apprehension that higher prices are impending. Chicago jobbers are naturally pleased at the decision by the trans-continental railroads which enables them to continue to reach the trade on the Pacific Coast. The demand for Tinnerns' Stock, Sheet Iron, &c., has fallen off to some extent, orders for future delivery being much less active than two weeks since. Heavy Hardware jobbers report their July trade far beyond anything previously known in this month. The demand for Iron and Steel, all kinds of Blacksmiths' Supplies, the full line of Wagon Makers' Stock and Supplies for small manufacturers continues unabated, and prospects are very bright for the immediate future.

St. Louis.

(By Telegraph.)

Few changes in prices have taken place this week. The heavier gauges of Black Sheets, from No. 18 to No. 10, are reported advanced 10 cents per 100 pounds. A resumption of work at Tin Plate mills is hoped for, as if action is not had soon the stock shortage will be pronounced. The better grades of metal goods of all kinds are in greater demand and the craze for the lighter ware dealt in largely by the department stores seems less intense. The prosperity of consumers is having a noticeable effect in all branches of business and cheap goods are finding judgment on their merits. Hay Bale Ties show advance of 15 per cent., in effect July 8, but no change has been named on Barb Wire and Wire Nails. In certain lines manufacturers are catching up with orders and the pressure is less acute. Wire Cloth as the season nears the end is in lighter demand, and the selling price has been reduced by St. Louis houses to \$1.25. Collections have been much better than anticipated, and jobbers who feared that customers had bought speculatively and would ask for further accommodations have been agreeably surprised at the freedom with which accounts are being paid. Business continues good and an increasing demand is had for Builders' Hardware. Specifications are coming in for Hardware to be used in hotels and various large buildings. More people are being employed in the trade than in times past, and there exists in St. Louis a demand for a high class of traveling salesmen, as this city is reaching out boldly for business in a wide territory. A question has been raised as to freight differentials by water and rail route from Atlantic seaports to the Gulf, and then by rail to

Missouri River points, which will prove of interest to jobbers near the Mississippi. Fifteen cents has been claimed due shippers by reason of the greater time consumed over all rail route and if not allowed trade will doubtless swing to St. Louis and Chicago. Unusual and trying conditions are reported from the flooded districts of Texas, and St. Louis jobbers will lend their usual good efforts in placing old and faithful customers on their feet. The merchant who promptly meets obligations, or frankly confesses good reasons for not meeting accounts when due, finds his reward in times such as confront Texas dealers to-day.

Notes on Prices.

Wire Nails.—There is something of a lull in the Wire Nail market, although the likelihood of an advance has had a tendency somewhat to stimulate buying. Manufacturers' former quotations are still unchanged, as follows, f.o.b. Pittsburgh:

To jobbers in carload lots.....	\$2.35
To " in less than carload lots.....	2.37½
To retailers in carload lots.....	2.45
To " in less than carload lots.....	2.55

New York.—Local trade is feeling the effect of the vacation season and the summer quiet, but there is on the whole a fair movement. Quotations remain as before:

To retailers, carloads on dock.....	\$2.55 to \$2.60
To " less than carloads on dock.....	2.75
Small lots from store.....	2.75 to 2.85

Chicago, by Telegraph.—The situation is unchanged from the standpoint of the manufacturers. They have been favored with remarkably good orders for the month and inquiries are continuing. They have not yet advanced prices, but quote single carload lots at the equivalent of \$2.60, Chicago, net cash in 30 days. Jobbers have experienced a continued good trade, owing probably to the apprehension of a further advance in prices, and hold small lots from stock firmly at \$2.70.

St. Louis, by Telegraph.—The volume of transactions is easy and no anxiety is shown as to either supply or consumption. The trade have made no demand for an advance in price on part of mills, but have come to think one in sight. Prices to day are equal to \$2.55, base, St. Louis, in carloads to jobbers. Single cars may be had of jobbers at \$2.65, base, and for small lots \$2.75, base, is quoted.

Pittsburgh.—The Wire Nail market is unchanged. There is a moderate demand and the tone of the market is strong, with early announcement expected of an advance in prices. We quote: To jobbers in carload lots, \$2.35, to jobbers in less than carload lots, \$2.37½; to retailers in carload lots, \$2.45; to retailers in less than carload lots, \$2.55, all f.o.b. Pittsburgh, with freight to destination added.

Cut Nails.—No further change in the price of Cut Nails is announced. The market has a decidedly firm tone, with only a moderate movement of goods. Quotations are as follows, f.o.b. Pittsburgh, freight being added to destination:

To jobbers in carload lots.....	\$2.10
To " in less than carload lots.....	2.15
To retailers in carload lots.....	2.15
To " in less than carload lots.....	2.30

New York.—Stocks are not accumulating, although Nails have not moved freely during the past week. The business that is doing is mostly of a sorting up character. Quotations for carload lots on dock are unchanged, at \$2.25, but the dealers are naming somewhat higher prices for small lots from store, which are held at \$2.45 to \$2.50.

Chicago, by Telegraph.—The usual volume of business is being done, but prices have been advanced to conform more closely with factory prices and small lots from stock are now selling at \$2.30.

St. Louis, by Telegraph.—The advance announced last week holds firmly at \$2.18, base, East St. Louis, in carloads. Jobbers still quote \$2.25, base, out of stock. No stimulated movement is noted.

Pittsburgh.—We are advised that the demand for Cut Nails is very satisfactory, the mills making large shipments and entering good sized orders. We quote to jobbers in carload lots \$2.10; to jobbers in less than carload

lots, \$2.15; to retailers in carload lots, \$2.15; to retailers in less than carload lots, \$2.30, all f.o.b. Pittsburgh, to which freight to destination should be added.

Barb Wire.—The market for Barb Wire is sluggish so far as the demand is concerned, but prices are very firm, as follows, f.o.b. Pittsburgh:

To jobbers in carload lots, Painted.....	\$2.45
" " Galvanized.....	2.95
" in less than carload lots, Painted.....	2.47½
" " Galvanized.....	2.97½
To retailers in carload lots, Painted.....	2.55
" Galvanized.....	3.05
" in less than carload lots, Painted.....	2.65
" Galvanized.....	3.15

Chicago, by Telegraph.—Manufacturers report a fair movement in both Plain and Barb Wire and continue to quote \$2.45, Chicago, for carload lots of Plain Annealed, \$2.70 for Painted Barb Wire and \$3.20 for Galvanized Barb Wire. Jobbers have experienced a falling off to some extent for a couple of weeks, but within the past few days the demand has revived considerably and a fair volume of business is now being done. They quote small lots from stock at 10 cents per 100 above carload rates.

St. Louis, by Telegraph.—Trade has shown no increase in sales and no change in price is noted. Carload lots from mills are quoted as equal to \$2.65, St. Louis. Jobbers' price, single cars, is \$2.75, and smaller lots \$2.85. The advance on Galvanized continues to be 50 cents per 100 pounds.

Pittsburgh.—Domestic demand for Barb Wire is dull, but a very large tonnage is being sold abroad. The market is firm, with no change in prices. We quote at \$2.45 for Painted in carload lots to jobbers and \$2.55 to the small trade, with an advance of 50 cents for Galvanized, all f.o.b. Pittsburgh.

Smooth Wire.—The market has not changed since our last report. While the demand being made on the mills is not heavy at present they are all fully occupied on orders. It is anticipated, however, that they will be in a position to accumulate something of a stock before the fall demand sets in. Quotations are as follows, f.o.b. Pittsburgh:

To jobbers in carload lots.....	\$2.20
To " in less than carload lots.....	2.22½
To retailers in carload lots.....	2.30
To " in less than carload lots.....	2.40

The charge for Galvanizing is 50 cents on sizes from 6 to 14 inclusive; on Nos. 15 to 16 it is 85 cents and on Nos. 17 and 18 \$1.10.

Pittsburgh.—There is a good demand and the mills are making large shipments. Prices are unchanged and we quote: To jobbers, \$2.20; to small trade, carload lots, \$2.30, and less than carload lots, \$2.40; on Galvanized Plain Wire, all sizes up to and including No. 14, 50 cents advance; 15 and 16, 85 cents; 17 and 18, \$1.10, all f.o.b. Pittsburgh, with freight to destination added.

Seavey's Miter Box and Saw Guide.—This article, of which we gave a description in *The Iron Age* June 8, is manufactured by Thomson, Cheney & Thomson, Lowell, Mass. It is sold at \$4, subject to a discount of 50 per cent.

Planes.—An advance in price has been made by the manufacturers of Wood Planes and quotations are now as follows:

	Discount.
	Per cent.
Bench, first quality.....	45 and 10
" second quality.....	50 and 10
Molding.....	40 and 2½

An advance has also been made in the price of Plane Irons.

Strap and T Hinges.—The manufacturers of Strap and T Hinges have made an advance in the base discounts, which are now as follows, the extra discounts given to the trade remaining as before:

	Discount.
	Per cent.
Light Strap Hinges.....	70
Heavy ".....	70 and 10
Light T Hinges.....	60 and 5
Heavy T ".....	60½
Extra Heavy T Hinges.....	70
Hinge Hasps.....	50
Long Chest Hinges.....	50

Cast Iron Soil Pipe.—Another advance has been made in the price of Cast Iron Soil Pipe, which is now represented by the following quotations on round lots from factory:

	Discount. Per cent.
Standard, 2 to 6 inch .....	.60
Extra Heavy, 2 to 6 inch .....	.65
Fittings.....	.70

Wire Picture Cord.—In view of the price of Wire and the difficulty of obtaining it the manufacturers of Wire Picture Cord have been obliged to advance their prices materially. There is, however, a good deal of the Cord in the hands of the jobbing trade, and in many cases the manufacturers are being undersold.

Cordage.—The advance of $\frac{1}{2}$ cent a pound made in the price of Manila Rope, as noted two weeks since, is firmly maintained and the market has a strong tone. A fair business is doing, Manila commanding the most attention. Manufacturers' quotations are as follows:

	Per pound. Cents.
Manila, 7-16 inch and larger.....	10
" $\frac{3}{4}$ inch.....	10 $\frac{1}{2}$
" $\frac{1}{2}$ and 5-16 inch.....	11
Sisal, 7-16 inch and larger.....	8 $\frac{1}{4}$
" $\frac{3}{4}$ in.....	8 $\frac{1}{2}$
" $\frac{1}{2}$ and 5-16 inch.....	9 $\frac{1}{4}$
" Lath Yarn.....	7 $\frac{1}{4}$

Manila Tarred Rope, 15-thread, is quoted at 10 cents, as is also Manila Hay Rope, Medium. The price of Jute Rope is 5 $\frac{1}{2}$ cents.

Glass.—Nothing new is to be chronicled in connection with the project for the formation of a new Glass combine, and the success or failure of the arrangements under way cannot be safely predicted. The Glass workers have decided not to meet the associated manufacturers until August, and if a settlement is not reached at the first conference the plan is to discontinue the negotiations and set about preparing a scale for the independent firms who will start up the middle of September. An increase in outside production is to be noted this week. Local business is dull and jobbers continue selling at former quotations of 80 and 20 per cent. discount for small lots of Glass and 85 per cent. discount for carloads. The American Window Glass Company's prices are as follows:

Districts.	A.	B.	C.	E.
5000 boxes or more.....	85 & 5	85 & 5	.....	85 & 5
Carloads.....	80 & 20	80 & 20	85	80 & 20
3000 boxes or more.....	85	85	.....	85 & 2 $\frac{1}{2}$
1000 boxes or more.....	.....	.....	* 85 & 5	.....

These prices are subject to freight allowance.

Paints and Colors—*White Lead*—So far during July contract deliveries of White Lead have been good, though some falling off may be expected from now on. The market is firm, with prices unchanged, as follows: In lots of less than 500 pounds, 6 $\frac{1}{4}$ cents; in lots of 500 pounds and over, 5 $\frac{1}{2}$ to 5 $\frac{3}{4}$ cents.

Oils.—*Linseed Oil.*—The market in Linseed Oil has not quite so strong a tone as a week or two since and slightly lower prices are obtainable. City Raw is offered at 39 cents in lots of five barrels or more, and at 40 cents in lots of less than five barrels. Western and State Oils are quoted at 36 to 37 cents per gallon.

Spirits Turpentine.—During the week a good deal of activity has prevailed and the price has materially advanced, present quotations being 44 $\frac{1}{2}$ cents per gallon for Southern and 45 cents for machine made barrels. Large buying for export has reduced stocks, which are very small.

Henry Disston & Sons' Buck Saws.

THE very attractive line of Buck Saws which Henry Disston & Sons, Philadelphia, are offering this season, was illustrated in the colored double page advertisement of theirs in our last issue. It comprises an assortment of styles and patterns which would seem to be sufficient to meet the requirements of any in the trade. A

variety of frames is presented, in regard to which the point is emphasized by the manufacturers that they are all made of perfectly seasoned lumber. It will be observed that the rods used in some of the Saws are made of steel, while others are made of malleable iron, the threaded ends being considerably thicker than the body of the rod, which together with the square thread is referred to as making them much stronger than ordinary rods. The manufacturers also lay stress upon the quality of these goods, of which the name Disston is a guarantee.

South Dakota Retail Merchants' Association.

THE second annual convention of the South Dakota Retail Merchants' Association was held at the office of the association in Mitchell, S. D., on Thursday, June 29. The convention was called to order with President Harvey J. Rice, Huron, in the chair.

The President's Address.

In his annual address Mr. Rice said that while the association had not accomplished as much as it had hoped, for it aimed high, or perhaps as much as was expected of it, still he felt that some progress had been made. The association was still in its infancy, and the members should not feel discouraged if great ends are not attained at once. Many obstacles have to be overcome, many prejudices conquered, co-operation secured, confidence established before great results can be seen. Mr. Rice, referring to the legislative work done by the association, said that they had endeavored to get several bills through the Legislature, which if they had become laws would have been of vast benefit not alone to the retail merchants of the State but to the consumer as well, but owing to circumstances over which the association had no control, mostly of a political nature, all of them fell by the wayside, except the Pure Food bill, which became a law and went into effect July 1. Mr. Rice highly praised the work of Secretary Healey, who, he said, was untiring in his efforts to advance the best interests of the association in every way possible.

Secretary's Report.

The secretary's report was a voluminous one, and detailed the work done by his office during the past year. Referring to the third Executive Committee meeting, Mr. Healey enumerated the measures which the association desired to become laws, as follows:

- An effective garnishment law.
- A change in the exemption laws.
- The block law.
- A pure food law.
- A law against fraudulent advertising.
- A law decreasing interest rates.

After a statement of the good financial condition of the association Mr. Healey referred in detail to the correspondence done by him during the year. This correspondence took the form of circular letters, of which many thousands were sent out. Among the subjects touched upon were the following:

Asking the assistance of traveling men in making the association popular with the merchants of the State.

Requesting members to forward a list of the jobbers from whom they had bought goods during the past year, so that the association could secure the co-operation of the jobbers and wholesalers selling the trade in South Dakota.

Inclosing a copy of the Peddlers' law, and calling attention to the advisability of the enforcement of this law by each member personally knowing of violations going on in his own community.

Requesting members to prepare and forward a list of catalogue house buyers in their section, for the confidential use of the association, so that such parties might be sent literature tending to direct their trade away from catalogue houses.

Requesting members to give information in regard to cases where a jobber or manufacturer, in or out of the State, sells direct to the consumer, with the object in

view of taking up the matter with the offending party and correcting the practice of such illicit shipments (about 25 complaints had been filed and systematically followed up to a successful termination).

Requesting members to make prompt renewals of membership, so that the work of the association might not be suspended (this method of securing renewals was entirely unsuccessful, and the association was afterward compelled to send out a solicitor in order to secure renewals and new members).

Requesting merchants all over the State, whether members of the association or not, to co-operate with the association in its legislative work, to the extent of sending a letter to their Representatives and Senators, calling their attention to such bills as the association desired to have passed (many merchants saw the importance of complying with this request and forwarded letters that did much good).

Mr. Healey then referred to the necessity for and value of trade associations, the importance of the members co-operating with the officers in the work of the association, and the securing of new members. He also advocated raising the annual dues to \$3. He summarized the work that should be taken up during the ensuing year, as follows:

We should continue to correct, in so far as possible, the illicit shipment of goods by jobbers and manufacturers.

To issue a bulletin to dealers monthly.

To issue some publication to farmers, who regularly send away for goods, containing such information as will direct their trade away from the catalogue houses.

To prevent the trade of the retail dealers of this State being given to houses that sell to catalogue houses and supply houses.

To prepare credit rating books in each county in the State.

To enforce the provisions of the Peddlers' law.

To enforce the provisions of the Pure Food law against the grocery catalogue house and the grocery houses soliciting orders in the State by personal canvass.

To continue our legislative work and secure the passage of such laws as will better protect the credit business of the business men of this State.

Election of Officers.

The following officers and members of the Board of Directors were elected:

H. J. Rice, Huron, president.
A. O. Ringsrud, Elk Point, vice-president.
L. J. Ochsenreiter, Webster.
R. S. Wessey, Wessington Springs.
Mark C. Betts, Mount Vernon.
L. S. Tyler, Salem.
T. W. Dwight, Bridgewater.

At a meeting of the Board of Directors, held immediately after the election of officers at the annual meeting, W. J. Healey of Mitchell was unanimously chosen as secretary, and A. F. Grimm of Parkston was elected to the office of treasurer for the ensuing year.

The Board of Directors was authorized to name a vice-president from each town in the State having members in the association.

After some discussion it was decided that it was advisable to incorporate the association, so as to deprive any individual member of the association from any liability that might ensue.

The by-laws were changed so as to permit the date of the annual meeting and the place of same to be left to the action of the Board of Directors at any of its various meetings.

The Executive Committee was changed to a Board of Directors, to agree with the incorporation of the association.

The annual dues were changed from \$2 to \$3, \$1 of which should be used as a subscription to the Bulletin to be issued by the association.

The legislative work to be undertaken at the next session of the Legislature was fully brought out in a general discussion, and the aims of the Executive Committee were fully indorsed.

The Bulletin.

It being the belief of the merchants in attendance that a bulletin could advocate and perpetuate the purposes, principles and intents of this association, through a multiplicity of avenues, it was decided to publish a bulletin

about 60 pages in size, to be known as the *South Dakota Retailer*. The magazine will be devoted entirely to the welfare of the association, and will be filled with such matters as would throw new light on the methods of catalogue houses and department stores, and communications from merchants in relation to various matters of interest. The greatest benefit of the publication, it is thought, would be to keep the members in closer touch with each other, and also to keep the work of the association constantly before the members. As the magazine will be more or less confidential in its nature and for the perusal of business men of the State only, there was some discussion as to whether it was best to admit advertisements or not, and it was finally decided to insert the advertisements of only those firms who refuse to sell to catalogue houses.

While the attendance at the meeting was small, the officers of the association feel encouraged by the numerous letters received to the effect that on account of the expense and time many members could not be present, but would stand by the association, and expressing their warmest sympathies. Many letters were received requesting the officers to push the work of the association in exposing the jobbers and manufacturers that make a specialty of supplying catalogue houses and department stores and that sell to the retail trade.

Illinois Retail Hardware Association.

AS already announced in our columns, the meeting called for the purpose of organizing a State association of Retail Hardware merchants in Illinois will be held in Chicago on August 16, 17 and 18. The following circular relating to the matter has been issued by Ehler Goettsche, 1049 Milwaukee avenue, and Fred. Kurtz, 1061 West Madison street, Chicago, Organization Committee, who will cheerfully supply any further information desired:

To the Hardware Dealers of Illinois:

GREETING: The Chicago Retail Hardware Dealers' Association believe that the Hardware dealers of Illinois should follow the example of the trade in surrounding States and form a State association for mutual benefit and improvement.

The Organization Committee appointed at a recent meeting of the Chicago Retail Hardware Dealers' Association hereby extend to you an earnest and hearty invitation to attend a convention called to meet at Schoenhofen's Hall, Milwaukee and Ashland avenues, Chicago, August 16, 17 and 18.

There will be a discussion of matters of interest to every Hardware dealer in this State, and no member of the trade should miss this meeting. Kindly inform us whether you will be present or not, as in order to secure a rate of a fare and a third for the round trip 100 dealers from out of the city must be present. Try and arrange it so as to do your fall business in Chicago at that time. Dealers expecting to attend this meeting will please follow these instructions:

HOW TO SECURE ONE AND A THIRD FARE.

Pay full fare on going trip and demand therefor a certificate from your local ticket agent. When the journey is made over more than one line, and the passenger finds it necessary to purchase more than one local ticket, he should procure a certificate thereof for each of the lines in the territory over which he travels in going to the meeting. Passengers should ascertain from the ticket agent what portion of their journey can be covered by the certificate obtainable from him and procure certificates filled out to correspond with the tickets purchased. These certificates must be stamped and signed by joint agent, who will be present at the hall the two last days of meeting, and presented by original purchaser not later than three days (not counting Sunday) after date announced for close of meeting. Failure to

procure or present certificate invalidates any claim for reduction in return fare.

The ticket given below has been sent to every Hardware merchant in the State:

SAVE THIS TICKET.

Bearer of this is a member of the

ILLINOIS RETAIL HARDWARE DEALERS' ASSOCIATION,

*coming from.....Co., Ill.,
is entitled to reduced Hotel Rates at the Sherman
House, N. W. Corner Clark and Randolph Sts.,
during the Convention, August 16 to 18, 1899.*

E. GOETTSCHÉ,

F. KURTZ,

Com. of Chicago Retail Hardware Dealers' Ass'n.

Hardware Merchants' Advertising Cuts.

FOR the purpose of aiding Hardware merchants in presenting their goods in an effective manner in the advertising columns of their local papers the fol-

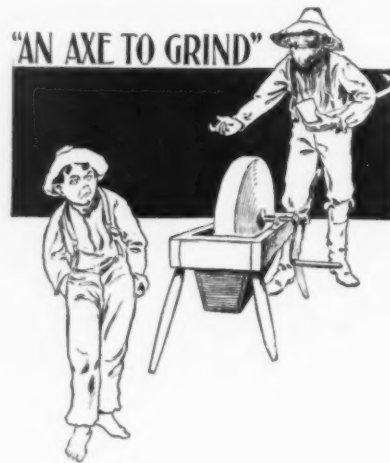


No. 11.—Price, 50 Cents.



No. 12.—Price, 50 Cents.

lowing cuts have been prepared and are offered for sale. No. 11 relates, it will be seen, to the line of Lamps which are taking a recognized place in many Hardware stocks. The cut is made of a width which will admit putting reading matter alongside of it in a narrow column, or may be effectively used in a double-column space. No. 12 relates to Fishing Tackle, and will aid in directing attention to this line of goods. No. 13, with its motto, "An Axe to Grind," may be worked in success-



No. 13.—Price, 50 Cents.

fully in a general advertisement, or in one relating to the special line to which it directly refers. If desired the words "An Axe to Grind" can readily be removed from the cut, which may be mortised to receive other matter. These cuts, with the others, Nos. 1 to 10, to which we have previously called attention, will be sent, postpaid, on receipt of price by David Williams Company.

"The Man in the Corner."

MANY in the trade will be glad to receive the monthly letter of J. B. Comstock, "The Man in the Corner," now writing in the interest of the Corbin Cabinet Lock Company, New Britain, Conn. From it we extract the following remarks, which many of our readers will appreciate, in regard to the personal element and the friendly feelings which are connected with the transaction of business:

Business is not all a matter of barter. There is more that goes out to a customer at each transaction than the goods and invoice, and more is received from him than the orders and payment, and this incorporeal seasoning of personality that permeates trade is what gives to it its savor and lifts it above the drudgery of mere money grubbing. Man does not work for wealth alone. In fact, there arises a time in the career of almost every successful man when the money that is made is a minor consideration, and in proportion as he gives his time and energy to his business does he value the other things he gets out of it, which his devotion to it prevents him from seeking elsewhere; and so the friendliness injected into his commercial relations means much to him. Every day brings to the managers of a concern like the Corbin Cabinet Lock Company evidences of esteem and closer relations that yield to them an increment aside from anything shown upon the balance sheets. It is the letters that praise the goods of a house, that comment favorably upon some phase of its policy or that contain evidences of personal esteem that are read and reread by all from the Head down, are passed from hand to hand with expressions of appreciation and are finally carefully filed. So, too, when by any chance the heads of the businesses meet, the cordiality that is displayed has its origin in the esteem gained from association, lying far deeper than any mere monetary consideration involved in the trading done.

The body of the letter is devoted, in the writer's usual happy vein, to the products of the company, and especially their Padlocks, of which two illustrations are given.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

W. B. MILLER & SON ON HARDWARE ADVERTISING.

HARDWARE ADVERTISING is the title of a pamphlet, price \$1, postpaid, issued by W. B. Miller & Son, Springfield, Ill., relating to the Hardware merchant's advertising. In the introductory remarks they explain that the first eight pages are devoted to the arrangement and display of advertisements, of which examples are given. Their methods in this respect are illustrated in the accompanying cuts, which are somewhat reduced, Fig. 1 being 2½ x 4 inches, and Fig. 2 4½ x 3¼ inches.

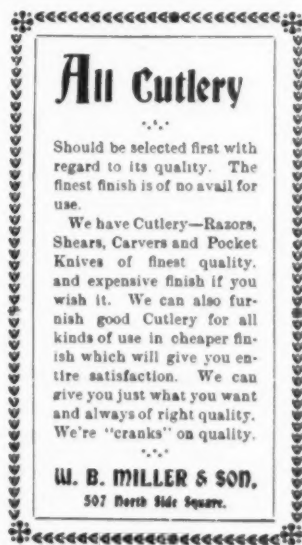


Fig. 1.—Specimen Advertisement, 2½ x 4 inches.

As indicating the object of the book and the attention which the compilers of it have given to the matter of advertising, the following extract from a letter of theirs will be of interest:

We have been interested in this important subject for years and the more attention we give it the more satis-

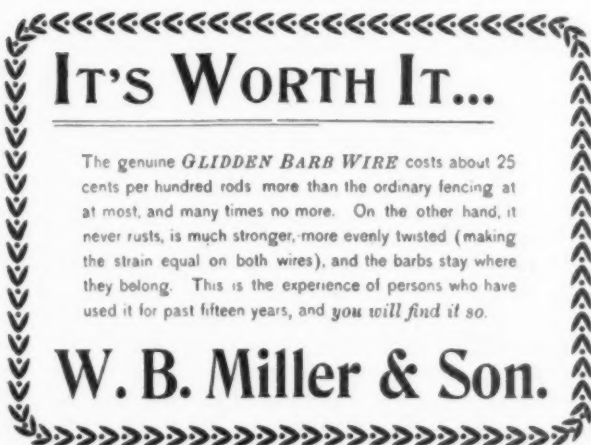


Fig. 2.—Specimen Advertisement, 4½ x 3¼ inches.

factory results follow. Finding it required much time, we read the best books, magazines and papers we could get on the subject. We bought advertisements, advertisement clippings, &c., but seldom found anything of value to us. We corresponded with several first-class advertisement writers, but their service was too expen-

sive for us, and it seemed a case of doing it ourselves, and we did do it thoroughly and well.

In this work we have the advantage of a practical knowledge of the goods and their sale. We devote each ad. to a single idea or line of goods, making them in this way much stronger and effective.

We try to do it in a dignified manner and without exaggeration, to give facts as they are, and to present reasons why we should have the business.

We pay special attention to the more profitable lines—Cutlery, Tools, holiday trade, Mowers, Washers, Churns and specialties.

The results have been satisfactory not only in sales of goods advertised, but proving also that our firm is alive and up to date.

From the interest displayed in this matter in the columns of *The Iron Age*, we were led to suppose the book would be of interest and value to the dealers of the country.

The greater part of the pamphlet is made up of copy for advertisements, which are not displayed, this matter being left to the judgment of the advertisers who may desire to make use of the assistance thus offered them. A careful perusal of the special matter of these announcements shows that they have been prepared with intelligence and care, and there is no doubt that many Hardware merchants will find them suggestive and helpful in connection with their advertising. That our readers may have an idea of the character of the matter thus presented, we extract a few of the advertisements:

NOTHING TOO GOOD.

There is no Hardware made too good for our customers. Years of experience has proved time and again the best grades of Hardware, Cutlery and Tools are not only much cheaper, because of the lasting quality, but are worth many times the small additional cost over the poorer kinds in the satisfaction you get.

EVERY PENNY

You spend with us for Hardware will be well spent, as we make it an invariable rule to handle goods of kind and quality forty years of experience has shown us will prove entirely satisfactory to our customers, making our prices as low as you expect them to be. A large stock such as we carry is of great advantage in making your selections.

A LAWN MOWER

To be perfectly satisfactory must be made of first-class material, the knives of proper kind of steel, carefully ground and tempered, and must be easily adjusted and not likely to get out of order. It must be constructed on correct principles to do the work properly, leaving the lawn smooth and without waves, and not choke down in heavy grass. It must be easily operated, perfectly noiseless, reasonable in price and last twelve or fifteen years. The Pennsylvania is all these.

DID YOU FORGET

Some friend on Christmas? 'Tis never too late to give presents, and a glance through out cases of fine Cutlery, Carving Sets, Shaving Sets and Tools may show you just what you want.

TONS OF COAL

Can be saved by using our Metallic Weather Strip for poorly fitting doors and windows, besides making your home warm and comfortable. This Strip is easily put on, stops all rattling, keeps out rain, snow, dust and soot, will last for years, as it cannot warp or crack, and is not expensive.

It is not unlikely that a good many merchants would find it feasible to adopt more or less of these advertisements without important modification, but they have perhaps an equal value in their suggestiveness, as merchants who give careful attention to the matter of advertising will be able to avail themselves of the experience and skill of those whose advertisements are thus brought before the trade at large.

The increasing attention which is being given by Hardware merchants to the matter of the cultivation of business by means of advertisements, circulars, &c., is certainly an encouraging sign.

A Heavy Hardware Conference.

At Morris Cove, New Haven, Conn., on Tuesday, July 11, representatives from the Heavy Hardware committees of the New England Iron and Hardware Association, the Eastern New York and Vermont Iron and Hardware Association and the New York City and Brooklyn Iron and Hardware Association met at the Pequot Club House as guests of the Western New England Iron and Hardware Association.

The idea of bringing these four organizations, whose natural territory adjoins, originated with Col. R. S. Woodruff of C. S. Mersick & Co., New Haven, and was enthusiastically supported by President Peirson and the entire association. The large number in attendance and evident interest shown by the visitors promises well for the growth and permanency of the newer associations.

It was near midday when all had arrived, and the company were called to order under the trees on the lawn in front of the beautiful club house and the business of the day was taken up immediately, H. C. Bangs of Providence, R. I., former president of the New England Iron and Hardware Association, being called upon to speak of the workings of that successful organization, which is now entering on its seventh year.

Later Allan J. Chase of Boston, chairman of the Price Committee, told of the methods employed in that branch of the New England Association's work and explained the credit or collection bureau, which is a feature of that association. These gentlemen answered questions and gave many valuable points to the younger organizations.

Others who made brief addresses were Chas. H. Turner of Albany, president Eastern New York and Vermont Association; Wm. E. Klein, president New York City and Brooklyn Association; L. L. Ensworth, Hartford, Conn., and M. McBarron, Boston.

The greatest good feeling was manifested and a helpful spirit was evident. Several practical suggestions were discussed and adopted, and the tenor of the meeting foreshadowed a close alliance between the four associations.

Those Present.

The following persons participated in the gathering:

J. E. Larrabee, J. E. Larrabee & Co., Amsterdam, N. Y.
 P. J. Bolan, Waterbury, Conn.
 R. S. Woodruff, C. S. Mersick & Co., New Haven, Conn.
 H. H. Ensworth, secretary Western New England Iron and Hardware Association, Hartford, Conn.
 Allan J. Chase, Chase, Parker & Co., Boston.
 John G. Wilkinson, Newburg, N. Y.
 Charles C. Lewis, Springfield, Mass.
 Geo. M. Darby, Burlingame & Darby, North Adams, Mass.
 Wm. C. Merrill and Jas. R. Merrill, the E. R. Merrill Spring Company, New York.
 W. A. Church, F. Hallock Company, Derby, Conn.
 Samuel Dudley, New London, Conn.
 M. Elsey, Brooklyn, N. Y.
 James K. Crofut, Blodgett & Clapp Company, Hartford, Conn.
 Wooster P. Ensign, New Haven, Conn.
 H. C. Bangs and W. W. Chapman, Congden-Carpenter Company, Providence, R. I.
 L. L. Ensworth, L. L. Ensworth & Son, Hartford, Conn.
 J. H. Rewe, Rewe Bros., secretary New York City and Brooklyn Association, Brooklyn, N. Y.
 Wm. E. Klein, Wm. E. Klein & Co., president New York City and Brooklyn Association, New York.
 Henry R. Peirson, Peirson Hardware Company, Pittsfield, Mass.
 C. W. Schleichtner, F. W. Wurster & Co., Brooklyn, N. Y.
 F. D. Foot, Homer Foot & Co., Springfield, Mass.
 J. O. Phelps, Jr., Blodgett & Clapp Company, Hartford, Conn.
 P. C. Nielson, Broderick Supply Company, New York.
 Henry Bodevin, N. Langler & Sons, Brooklyn, N. Y.
 Emil Rudolph, C. Suffer & Co., New York.
 H. F. Gundrum, New York.
 Chas. H. Turner, Albany Hardware and Iron Company, Albany, N. Y.

Franklin Allen, S. Allen's Sons, Greenfield, Mass.
 Arthur C. Harvey, A. C. Harvey Company, Boston.
 L. E. Stockwell, Eaton, Chase & Co., Norwich, Conn.
 F. A. Hull, Hull & Hoyt, Danbury, Conn.
 Jos. Ruppert, Brooklyn, N. Y.
 Robert Russell, J. Russell & Co., Holyoke, Mass.
 W. D. Hubbard, Side Weight Horseshoe Company, Hartford, Conn.
 M. McBarron, McBarron & Co., Boston.
 J. M. Delaney of D. Delaney & Son, Newark, N. J.
 W. T. Crane, J. S. Crane Carriage Hardware Company, Newark, N. J.
 F. W. Hallock, J. Hallock & Sons, Derby, Conn.

A Shore Dinner.

Shortly after 2 o'clock Sergeant Wooster A. Ensign marshalled those in attendance and led them to the dining room, where for more than two hours attention was given to a genuine Connecticut shore dinner, including everything usually served on such occasions and a great deal more, both solid and liquid.

It was late when cigars were lighted, and, owing to the desire of the New York and Boston men to return home, the *post prandial* exercises were shortened, embracing only a felicitous speech by Colonel Woodruff, a good story or two by President Peirson and a graceful expression of appreciation by Jos. Ruppert of Brooklyn.

Col. R. S. Woodruff had charge of the entertainment, and did everything for the comfort and pleasure of the visitors. Acting as a committee of one, he arranged all the details, and, with the hearty co-operation of every member of the association attending, carried the day to a very successful conclusion.

Interpretation of Contract.

FROM a well-known jobbing house we have the inquiry contained in the letter which we give below. It relates to a matter which doubtless in one form or another has, as the result of the marked advance in prices, frequently come up of late in the dealings between merchants and manufacturers. We lay the inquiry of our correspondents before the trade, and shall be glad to have any expression of opinion as to the correctness of their position:

We made a contract last January for a certain line of goods, for our requirements from that time to July 1; we sent a great many orders in during the last month before the expiration of this contract, and the factory rather takes the position that they ought not to fill them at the prices that were ruling at the time we made our contract, and at which our contract really was entered, and they wish to decline the principal orders that we sent.

We did not care for a very large stock of goods during the spring months, although the demand has been very heavy on us, and along about June 1, as stated, we sent them quite a large stock order. Contract entered for our requirements, without any special quantities mentioned, specifications to be furnished between certain dates, shipment to be made as soon after date of order as possible.

Doesn't this mean that we are entitled to as many goods as we may care to order, for our stock, or as we care to sell to our customers?

In further explanation, would say: We made this contract and continued to sell goods largely, sending orders for direct shipment to our customers in very large quantities, considering the size of the merchant to whom we were selling, simply because they expected an advance and were willing to buy a little more freely than in past seasons. All of these orders were accepted without any comment and shipped, or will be shipped, to our customers as soon as they possibly can get the goods out.

We naturally were filling orders from our stock more freely than we had been formerly selling, and waited until about 30 days before the expiration of our con-

tract, and sent quite a large order or two for our stock, to take the place of goods we had sent out. There was nothing speculative in our orders, and simply would give us goods for our requirements for about 60 to 90 days. We think under these circumstances they should not hesitate to fill our orders.

Requests for Catalogues, &c.

Percy Seabrook of the Anglo-American Novelty Company, 21 Edmund Place, Aldersgate street, London, E. C., is in this country in the interest of his company, looking up new things in Bicycles, Accessories, Hardware, Stationers' Hardware, &c. He is stopping at the Astor House, which will be his headquarters for the next two or three weeks, and where he will be pleased to receive catalogues, information and quotations on lines of goods of the character mentioned, or see individuals having specialties to market.

The store of Hanson & Evenson, Sheldon, N. D., was burned out a short time since. The firm are at work on a new brick building, which they will complete as soon as possible. They desire to equip it with the latest devices for the display and accommodation of Hardware, and will welcome catalogues from parties in this line. They will also appreciate catalogues and other printed matter from manufacturers and jobbers pertaining to Shelf and Heavy Hardware, Stoves and Tinware, Farm Implements, Sporting Goods, &c.

The store of O. J. Williams, New Richmond, Wis., was destroyed by the cyclone which swept through that place on the 12th ult. Even the books of the firm were lost. The business has been reorganized under the style of O. J. Williams & Co., who are rebuilding on the old site and will soon be doing business as heretofore. The firm will appreciate copies of catalogues, price-lists, &c. Their former line included Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Wagon Makers' Supplies, &c.

Canadian Customs Requirements.

THE requirements of Canadian customs in regard to packages of goods shipped from the United States into Canada are given in the following communication, which comes from a prominent Dominion house:

According to the customs requirements, all packages shipped from the United States into Canada should have some designating marks, and these marks should appear on the invoice. Invoices to be made in such a way that the Appraiser will have no difficulty in knowing the exact contents of each package.

We thought, perhaps, you would refer to this in your next issue, as we know of no better way of reaching the largest shippers than through the means of your valuable paper.

Waterbury Rope Company Catalogue.

THE WATERBURY ROPE COMPANY, 69 South Street, New York, have just issued an illustrated catalogue on Rope and Rope making, which contains many instructive and interesting features. At their extensive works in Brooklyn they manufacture Rope and Binder Twine from Manila, Sisal, Russian, American and Italian hemp; also Transmission and Hoisting Ropes, Oil Well Drilling Cables, Steamboat and Wrecking Lines, Ships' Hawseers, Gangs of Rigging and Fishermen's Cables. In the front is a page engraving of their works. Then is given a sketch of Rope and Rope making, ancient and modern, followed by illustrations of the Manila plant and method of preparing Manila hemp in the Philippines, the Sisal plant and various operations necessary in its preparation. Then come detailed views from their own factory showing the manipulation of the raw product. Part II is a price-list of Rope and Specialties, in which is enumerated the various kinds of Ropes, Yarns, Twines, &c., made by them. Part III relates to Manila Transmission Rope, embracing the degree of twist to the hemp, lubrication of Ropes, pulleys and horse-power, &c. A series of pages is devoted to describing the splicing of Ropes and tying of knots, 51 different knots being illustrated.

W. C. BURKINSHAW, 29 Murray street, New York, is the selling agent for New York and adjacent territory of the Sash Cord, Clothes Lines, &c., made by the Anniston Cordage Company, Anniston, Ala., and is in a position to represent one or two additional concerns making kindred goods.

The National Cutlery Company.

UNDER this title a new enterprise has just been started in Philadelphia. The plant of the concern is really an added department to the large and well-known works of Thos. Devlin & Co., at Third street and Lehigh avenue, in that city, and will be operated for the manufacture of Steel Laid Shears. A line of Straight and Bent Trimmers and Barbers' Shears has already been placed on the market, and other lines will no doubt be introduced in the course of time. It is the object of the promoters of the enterprise to manufacture the highest possible grade of Shears from the best material obtainable in the market. A small catalogue has just been issued, and the Shears put out are guaranteed to be exactly as represented in the catalogue.

The manufacturing department of the concern is in charge of L. A. Nickerson, a man of life long experience in the manufacture of Shears, and formerly in charge of the manufacturing department of the Davonport Cutlery Company, Davonport, Iowa; and the sales department will be managed by C. W. Sprague, formerly of the Waterville Cutlery Company, Waterville, Conn., and well and favorably known to the Hardware and Cutlery trade of the country.

The enterprise is regarded as launched under more than ordinarily advantageous conditions, and will doubtless meet with a fair share of trade in the line covered.

Heller Brothers Company.

The firm of Heller & Bros., Newark, N. J., doing business since 1836, on the first of this month incorporated under the style of Heller Brothers Company. The new company are a close corporation with a capital of \$500,000, being owned and managed by the same persons as heretofore. The following officers and directors constitute the company: Elias G. Heller, president; Paul E. Heller, vice-president; Arnaud G. Heller, secretary and treasurer; George E. Heller, manager Rasp and File Works; John J. Heller, assistant manager Rasp and File Works; Ernest A. Geoffroy, manager Steel and Tool Works.

Price-Lists, Circulars, &c.

LALANCE & GROSJEAN MFG. COMPANY, 19 Cliff street, New York: July, 1899, revised catalogue and price-list of their Agate, Nickel-Steel, Pearl Agate, Peerless, Blue and White and All White Enameled Wares; 132 pages, 400 illustrations. Special attention is called to the company's "case lot" system, which insures more promptness in shipment and greater safety in transportation.

THE J. M. MAST MFG. COMPANY, Lancaster, Pa.: Circulars relating to Mouse and Rat Traps.

SEDGWICK MACHINE WORKS, Poughkeepsie, N. Y.: Catalogue "D" of the Sedgwick Dumb Waiters and Elevators.

THE PLUME & ATWOOD MFG. COMPANY, Waterbury, Conn., and 29 Murray street, New York: Illustrated catalogue of metal Royal Lamps, showing many unique styles and a variety of finishes.

Trade Items.

THE Hockaday Hardware Company, Wichita, Kan., advise us that their buyer, I. N. Hockaday, will be in New York City from July 21 to 31, for the purpose of buying fall stock. Mr. Hockaday's headquarters will be room 205, Postal Telegraph Building.

THOMAS F. KEATING, who has long been identified with the Yale & Towne Mfg. Company, arrived in New York by the steamer "Teutonic," July 5, from a trip through the Continent and the United Kingdom, begun early in April of this year.

OUR ATTENTION has been called to the fact that in The Iron Age Index Supplement Northfield Knife Company, Northfield, Conn., do not appear under the heading of "Cutlery, Pocket," where they should have been placed. The trade will note the correction and insert in the Index Supplement under the proper heading the name of the company, who have been so long and prominently identified with the manufacture of Pocket Cutlery.

OUR READERS will observe among the Special Notices in this issue one with a *nom de plume* "Southern," in which a Southern wholesale and retail house announce their desire to secure a man to take charge of their Builders' Hardware Department. We may add that the advertisers are a prominent and successful house, and the opportunity is deserving the attention of any who may be qualified to fill the position.

The Iron Age Advertising Prize Competition.

We hereby announce an Advertising Prize Competition for the best advertisement relating to one of the following lines: FARMERS' TOOLS, APPLE PARERS, WINDOW SCREENS, ICE CREAM FREEZERS, MEAT CUTTERS.

1. **Object.**—The object of the Competition is to draw out the views of the trade in regard to the best and most effective methods of advertising the goods in question. The general participation of those interested in the Retail Hardware Merchant's advertising is invited, such use as we may deem advisable to be made of the competitions submitted.

2. **Form.**—Those entering the Competition should send to the address given below the design or draft of an advertisement in such form as to indicate clearly its size, subject matter, kind of type, character of display, &c.

3. **Size.**—The advertisement should not contain more than 25 square inches and may be arranged in one or more than one column.

4. In Regard to Illustrations:

(a.) The advertisement may be without illustration, or it may, at the option of the designer, contain one of the Cuts, Nos. 1 to 5, given in *The Iron Age* June 29.

(b.) If one of these cuts is used it may be indicated by pasting the illustration in the advertisement, or simply designating the cut by number, leaving proper space for it.

(c.) Original illustrations may be suggested, in which case a rough sketch, which will be sufficient to give our artist the idea of the illustration, will be acceptable.

5. **Date.**—This Competition, which is open to any in the trade, will close Saturday, July 22, 1899.

6. **Prizes.**—The following Prizes will be awarded:

FIRST PRIZE, \$25.

SECOND PRIZE, \$15.

THIRD PRIZE, \$10.

All communications are to be addressed to

THE IRON AGE,

232-238 William Street,

New York.

Advertising Prize Competition.

Among the Hardware Trade.

Broucher & Johnson have succeeded J. W. Holschmidt in the Hardware line at Humboldt, Kan. The new firm will shortly add a stock of Furniture.

P. D. Stout has purchased the interest of M. Lumley in the firm of Stout & Lumley, Bristow, O. T., and is continuing under his own name.

M. J. Dougherty has opened a new store at Mt. Vernon, S. Dak., handling Shelf and Heavy Hardware, Tinware, Agricultural Implements, &c.

About \$25 worth of Cutlery was recently stolen from the store of W. A. Boynton at West Chicago, Ill.

P. E. Brooks has sold his stock of Hardware, at Paola, Kan., to J. M. Davidson, formerly of Evansville, Ind., who is continuing at the old stand. Mr. Brooks will continue his store at Parker, Kan., where he carries a line of Hardware and Farm Implements.

C. H. Shields has purchased the W. S. Howell Hardware stock, at Lovington, Ill.

Biwabik Hardware Company are a new firm, at Biwabik, Minn.

Borland Bros. have purchased the Hardware business of D. B. Baker, at Washington, Pa.

The Korb Hardware Company, with a capital stock of \$10,000, have succeeded Jacob Korb & Son, at Louisville, Ky.

Tull & Rodgers have succeeded Geo. B. Foster, at Monticello, Ill. In connection with the Hardware business the new firm will handle Harness and conduct a Harness shop.

M. L. Langford has succeeded Wheless Hardware Company, dealers in Hardware, Stoves, Tinware, &c., Yazoo City, Miss. Mr. Langford has had an experience of 13 years as a Hardware salesman, most of which time has been spent with W. G. Casteel, Meridian, Miss.

Prescott Hardware Company, wholesale and retail, Prescott, Ark., are erecting a one-story brick building, 55 x 100 feet, to cost \$4000, which they expect to occupy with their business about August 1. An Iron warehouse is also under way, which will cost about \$800. Its dimensions are 30 x 125 feet.

H. M. Worley, Weeping Water, Neb., has taken F. S. Warner into partnership, and the style is now Worley & Warner. The stock formerly carried has been increased, and a tin shop added.

James H. Laurie and Geo. W. Frazier, under the style of Laurie & Frazier, have opened a new store at Alamogordo, N. M. The firm are handling Shelf Hardware, Stoves, Tinware, Sporting Goods, &c.

M. F. Tallmage's store, at 80 and 82 Seneca street, Buffalo, N. Y., was recently damaged by fire. Mr. Tallmage will continue at the old stand after making repairs and materially improving the store, both in appearance and arrangement.

B. L. Monck Hardware Company have purchased the McCulloch Hardware stock, at Ballard, Wash. The members of the new firm are B. L. Monck and L. G. Delaware. Their stock comprises Hardware, Tinware, Stoves, Paints, Varnishes, &c.

W. B. Davis has sold his Hardware business at Crescent City, Ill., to W. W. Parkman of Philo, who will continue with his brother under the style of Parkman Bros.

Miscellaneous Notes.

Tucker & Dorsey Mfg. Company.

In their recently issued illustrated catalogue and price-list Tucker & Dorsey Mfg. Company, Indianapolis, Ind., represent a number of new goods which have been added to their manufactures. Among these are alarm money drawers, stove platform trucks, vegetable cutters, towel rollers, rolling pins, lemon squeezers, wareroom trucks, &c. A special casket catalogue will be issued by them within the next few weeks.

Hot Air Registers and Ventilators.

Seavey Mfg. Company, 120 and 122 North street, Boston, issue a price-list of hot air registers and ventilators which they are putting on the market. Being outside of the combination, they mention that they have special inducements to offer to the trade and invite inquiries.

The Diamond Cycle Stand.

Under license of the patentees, the L. M. Jones Company, Winsted, Conn., are manufacturing exclusively for the Eastern trade and export market the Diamond cycle stand, patented February 2, 1897. The stand is described as made from handsomely polished hardwood, with coppered or nickel plated steel spring supports, the joints being nailed and glued. The stand is referred to as light

and strong and folding into small compass and fits all sizes of wheels. It is claimed to be the only folding bicycle floor stand made. The stand is packed one dozen in a crate, measuring about 22 x 22 x 14 inches, a dozen crated weighing about 30 pounds.

Some New Goods.

H. H. Mayhew Company, Shelburne Falls, Mass., in catalogue No. 9 of hardware and mechanics' tools, just issued, offer a number of goods which are referred to as new with them. One of the novelties is their Monarch cabinet screw driver, in 4, 6, 8 and 10 inch sizes, for cabinet makers and electricians' use on low potential circuits. Another is the Goodell-Hay ratchet brace with quick acting chuck. Other goods are double cut sucker rod bits and Mayhew ice picks, the latter in a variety of styles and sizes.

Automatic Swinging Hammock Couch.

R. Christensen, 88 Chambers street, New York, is marketing the automatic swinging hammock couch, for piazzas, lawns and similar places. In size it is 6 feet 2 inches long and 2 feet 2 inches wide, and is suspended from the four corners by adjustable cords, which can be instantly lengthened or shortened at will. There is a slight curve at the head, and two corner uprights with three horizontal slats at the foot. Around the edges of the frame, which is steel bound, is a long fringe in the better grades, the cheaper variety having no fringe. The motion is lengthwise, not from side to side, and movement is obtained by an occasional gentle pressure of the feet against the foot slats. The frame work prevents any doubling or cramping of the body. It is referred to as an artistic hammock, a luxurious couch and a natural fan.

Full Moon Acetylene Lamp.

F. E. Baldwin, 101 Duane street, New York, is manufacturing the Full Moon acetylene gas lamp for cycles, carriages, &c., as here illustrated, and Hermann Boker & Co., at the same address, are marketing the entire product. The lamp is made of nicked brass, is 5½ inches high, has a reflector 3 inches in diameter and weighs empty only 9 ounces. Water is introduced through a screw cap at the top and the flow controlled by turning the wire indicator right or left. The main difficulty in burning carbide is to keep the channels clean and free from any obstructions. This is accomplished in the Full Moon lamp with regard to the water feed by a simple and ingenious contrivance,



Full Moon Acetylene Gas Lamp.

by means of which the water tube is automatically freed of any accumulations of carbide powder every time the water indicator is moved. Carbide is placed in a cylinder fastened to the bottom, the cylinder being 2 inches high and 2 3/16 inches in diameter. Above the carbide is a perforated disk and tube, the latter wound with muslin and the charge held down by a brass spiral spring attached to a solid metal disk above. The carbide chamber is clamped to the bottom of the lamp by three hinged eccentric clamps, which keep it rigidly in position. It will be seen the flame is projected straight ahead from a lava tip and there is no lens or glass in front, the reflector being placed at a sufficient angle to throw the light on the road in front of the wheel. The lamp retails at \$2.50 and with every one a strong guarantee is given. The main points made by the manufacturers are its extreme simplicity, lightness and ease with which it can be maintained.

Universal Powder Measures.

Letters patent will be granted to the Ideal Mfg. Company, New Haven, Conn., under date of July 8, 1899, for improvement in powder measures. They are now ready for the market, and will be known as Model 1899 Universal powder measures, Nos. 1, 2, 3 and 4. The Ideal shot shell loading machine will also have the new improved measures. These measures will handle all kinds of powders for rifles, pistols or shot guns, black, nitro, or smokeless, fine or coarse, whether the granulations be angular, round, cylindrical, flat or leaflet, measuring all from the smallest to the largest charges required, from 1 grain up. These measures are said to have the official indorsement and recommendation of the powder manufacturers. The powder measure on each of the implements above enumerated will have three different graduations. Reference to the letters in illustration of Universal powder measure No. 1 will suffice for all. A and B indicate the small measure, which will accurately measure from 1 to 35 grains, which is its fullest capacity. The graduations for this measure will

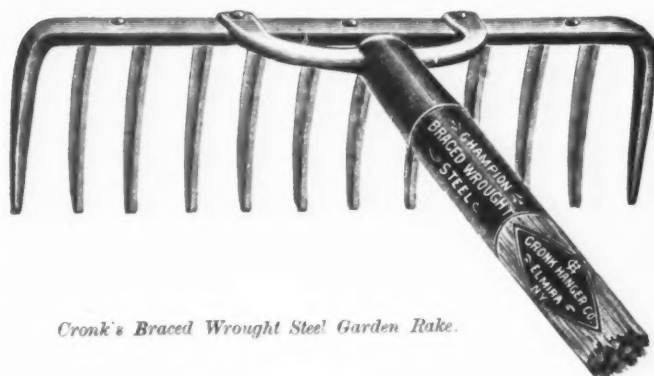


Ideal Universal Powder Measure.

be found on the slide B. The markings are for 1 grain each, and when set at the desired mark is to be fastened with the set screw A. Letters C and D designate the large measure, which will measure powder accurately from 30 to 140 grains. The graduations on this measure are on the round sliding plug D on the opposite side from the slide B. There are two sets of graduations for this measure, one for grains the other for the old dram measurement; the grain divisions are for 5 grains each, from 30 to 140 grains. The dram divisions are for ¼ dram each, from ½ dram to 5 drams. When set at desired mark it may be fastened with set screw C. The manufacturers commend the measures described especially to gunsmiths, gun, rifle and pistol clubs, armories, powder makers or any loaders of ammunition.

Cronk's Wrought Steel Rake.

Cronk Hanger Company, Elmira, N. Y., are manufacturing Cronk's Champion braced wrought steel garden rake, here shown. The teeth are described as thin and broad,



Cronk's Braced Wrought Steel Garden Rake.

making them of increased strength in the line of strain, and are made of polished wrought steel in pairs, solidly riveted to the channel steel head, the end teeth being crimped, which prevents the tendency to bend sideways. The tool is strongly braced and has a bronzed malleable socket. Three sizes are made, having 12, 14 and 16 teeth.

The New Corbin Lock.

P. & F. Corbin, New Britain, Conn., have just put on the market the Corbin lock set herewith illustrated. Some unique principles are involved, both as concerns the construction and method of fitting to the door. The sets are sent out assembled just as they appear in use, with knobs and escutcheons attached, each set in an individual box, perfectly adjusted by expert mechanics,

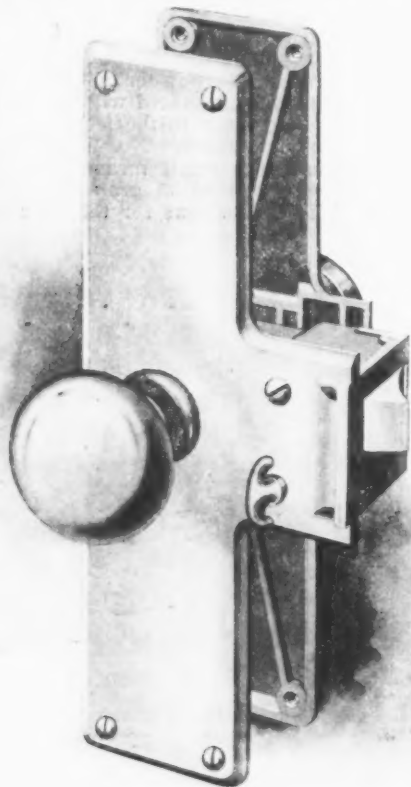


Fig. 1.—Front Door Lock from Inner Side, Showing Locking Collar on Knob, Swinging Latch and Dead Bolt with Thumb Knob.

and can be used for right or left hand doors. In this way loss of parts either through the dealer or carpenter, with the consequent annoyance and waste of time, is prevented. The lock is made up in three sizes, adjustable to any thickness of doors, one size fitting all doors from 1½ to 2 inches, inclusive, in thickness; one size for

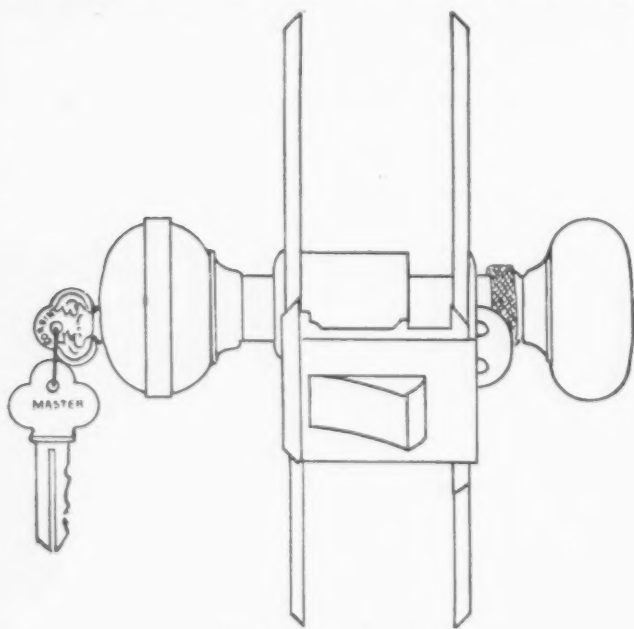


Fig. 2.—Office Door Lock.

doors thinner than 1½ inches, and another size for all thicknesses greater than 2 inches.

To put the lock on, it is only necessary to saw from the stile of the door a piece 3 inches deep by 1½ inches wide and slide the set just as received into the cut thus made, tighten the machine screw that clamps the escut-

cheon against the side of the door, and drive home four screws in each escutcheon. The outline cuts herewith given, while not showing the lock as attractively as the half-tone cuts used in the elegantly printed pamphlet issued by the company, are designed to show clearly the different features of the set. Fig. 1 shows a door lock, from the inner side, with locking collar on knob, swinging latch and dead bolt with thumb knob. Fig. 2 represents an office door lock, without dead bolt, showing position of key work on the outside, the locking collar and thumb piece on the inner side; also the arrangement for adjustment to doors of different thicknesses by moving inside escutcheon along the lock spindle. Fig. 3 is an office door lock with jacket removed, looking from above. The two rollbacks in the center perform a double function, operating the latch and locking the door when manipulated by the collar on the inside knob. Fig. 4 is a protected strike.

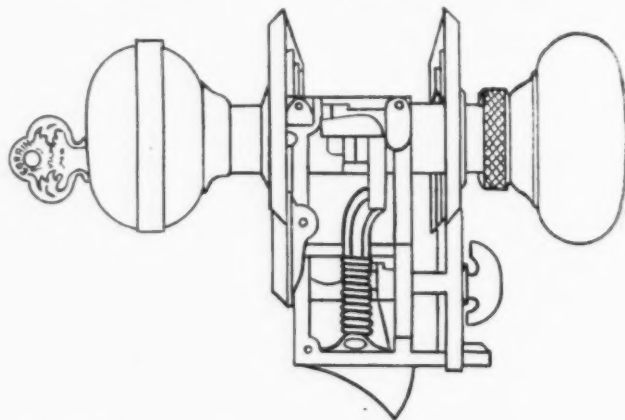


Fig. 3.—Office Door Lock with Jacket Removed, Looking from Above.

with lip and brass backed latch pocket. Fig. 5 shows the solid cast bronze frame, in which is held firmly all the remaining parts in their proper place. In Fig. 6 is seen a lock as it appears on the door. In Fig. 3, showing the inner detail of the office lock, it will be seen the thumb stop is on, dead locking the lock. If this were off the latch could be operated by turning either knob. To lock the door it is only necessary to give the collar on the inside a quarter turn, throwing the rollback nearest the outside into the slot shown, making the outer knob immovable. The latch can then still be operated by the inside knob and the other rollback, or from the outside by the key, which engages the rollback by means of the locking spindle running through the knob spindles. On front door locks there is a dead bolt under the latch in

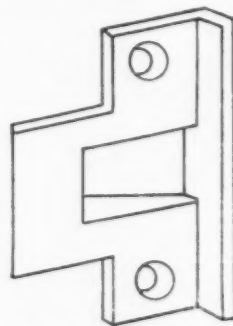


Fig. 4.—Protected Strike.

addition to the latch, attached to the thumb knob, instead of the dead locking device shown in Fig. 3. Communicating locks have upon each side a thumb stop like that shown in the illustration, so that each of the occupants of adjoining rooms can lock the door against intruders. Closet locks have simply the latch mechanism, with a knob on the outside only. Ship locks have a key action on each side, without the locking ring, and another pattern is similar, but has a drop handle on the outside for narrow passages. Bedroom locks, hotel locks, &c., show different combinations of the same functions to suit the requirements of the places where they are used, while other patterns embodying variations of the principle employed will be added as required.

The unusual thickness of the lock, and the fact that its inside face is always the same distance from the outside of the door, is referred to as permitting the use of a hinged or swinging latch, a form that for easy action and anti-friction qualities is unequalled, but which has been kept out of universal use because ordinary lock cases are too narrow to accommodate it. With this latch the door closes easily and smoothly, and the impact of the latch

with the strike is not felt. The strike is the same for all locks, one uniform size answering for all thicknesses of doors. The lip at the outer edge is mortised into the stop and the edge of the lock frame rests against it when the door is closed, rendering it impossible to insert anything from the outside to push back the latch. The indented portion of the strike is also protected by a brass backing, the cut in the door frame not showing, thus obtaining a neat and finished appearance not otherwise possible. The distance from the lip of the strike to the top of the

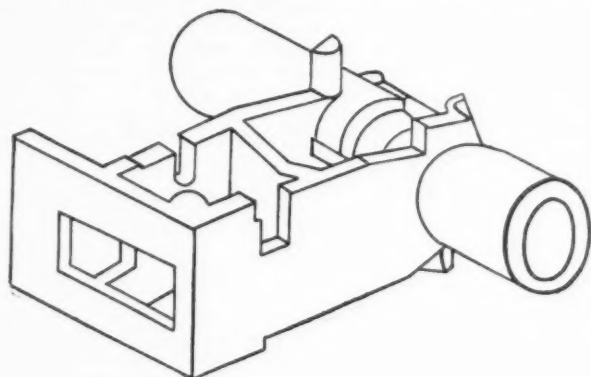


Fig. 5.—Solid Cast Bronze Frame.

latch being the same in all instances, it is possible to accurately calculate the space required to accommodate the latch, so that the door is always tightly closed, and the shrinking or swelling of the wood does not affect it.

An important feature to which the manufacturers direct attention is that in a lock so constructed, set up by skilled workmen and sent out with all parts fitted, a very close adjustment of the mechanism is possible. With a solid one-frame piece, holding all the parts and keeping them rigidly in the same relative position without possibility of displacement, extreme accuracy can be employed, in this case, for instance, the play of the knobs in

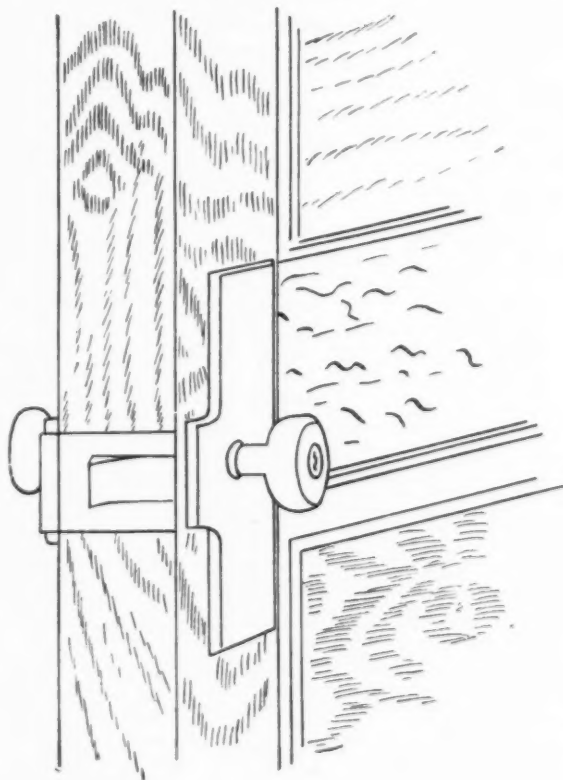


Fig. 6.—Office Door Lock in Position.

the frame being restricted to a maximum of two one-thousandths of an inch. Placing the key work in the knob is also a radical departure and gives additional room for the latch mechanism and greater strength to the frame. In the knob is a ball bearing pin tumbler locking cylinder, which can be both master keyed and grand master keyed for any number of locks. Illustrations and price-lists covering the line in detail, describing styles and finishes, &c., are in course of preparation, but the company have issued a handsomely printed monograph of 16 pages, which fully illustrates the lock and describes its construction and special features.

Seamless Non-Detachable Collar Flush and Supply Pipe.

U. T. Hungerford Brass & Copper Company, 121 Worth street, New York, have put on the market a new style of flush and supply pipe for plumbing, as here illustrated. The particular feature is an improved seamless non-detachable collar, perfectly true and guaranteed by the manufacturers free from leakage and any possibility of being pulled off in attaching to the overhead tank used for flushing water closets. The improvement consists of making the collar a part of the pipe itself, instead of sweating on with solder or screwing on the pipe, which often results in a weak or crooked connection. This method insures a straight, true collar, impossible to



Fig. 1.—Seamless Supply Pipe with Non-Detachable Collar.

Fig. 2.—Same Pipe for Flushing.

pull off. Pipes can be furnished any size, with collar to fit any size nut. They can be had in plain brass or nickel plated on brass, with or without offsets. Flush pipes are regularly made 6 feet long and $1\frac{1}{4}$, $1\frac{3}{8}$ and $1\frac{1}{2}$ inches outside diameter of Nos. 17, 18, 19 or 20 B. & S. gauge. Supply pipes are 7 feet long, with outside diameters of $\frac{1}{2}$ and $\frac{5}{8}$ inch, of No. 15, 16 or 17 B. & S. gauge, together with iron pipe sizes same as $\frac{3}{8}$ and $\frac{1}{2}$ inch.

The Phenix Hanger and Fastener.

The Phenix Mfg. Company, Milwaukee, Wis., have brought out the devices herewith illustrated for hanging



Fig. 1.—Right or Left Hand Half Set, as Applied to Sash.

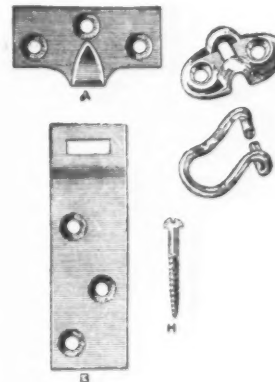


Fig. 2.—Right Hand Half Set.

and fastening entire window screens and storm sash. These appliances make a most effective lock, drawing the sash up firmly by the upright stiles to the window frame. Parts A and B are made of wrought steel and the fastener is made of steel wire, all in black rubber japan finish.

Porch and Lawn Acetylene Generator.

A new form of acetylene generator for lighting purposes is shown in the accompanying illustration, which presents a view of the porch and lawn generator made by the Coleman Gas Works Mfg. Company, 627 Main street, Cincinnati, Ohio. The generator is equipped with a series of small pans inside, one above the other, placed upon a tube that works up and down over a discharge pipe which conveys the gas to where it passes through the water chamber, condensing and purifying it before entering the burner ready for use. The idea of the small pans and series is to divide the carbide into the small portions



Porch and Lawn Acetylene Generator.

which are placed in each. By this means the carbide does not come in contact with the water any faster than it is consumed, and the machine therefore is rendered perfectly safe. The machines are made for single, double and triple burners, and, we understand, have given great satisfaction wherever used. The circular issued by the company states that 1 pound of carbide will run eight hours. The usefulness of such an apparatus where an outdoor light is needed will be readily apparent.

Hull's Improved No. 1 Bonanza Furnace.

In the accompanying illustration we show the Improved No. 1 Bonanza furnace, made by M. L. Hull, Cleveland, Ohio. Some of the features pointed out by



Hull's Improved No. 1 Bonanza Furnace.

the manufacturer are an indestructible steel tank, which, it is claimed, never wears out, and a fixed rubber bulb with durable brass valves that cannot get loose or wear out. The filler screw is made with a hose nipple, so that a common rubber bulb can be connected in case of an accident with the other pump. The burner is 3½ inches long, and concave, burning from both sides toward the center, striking the soldering copper on two sides at the same time. It has a cut off switch for use in starting

the fire and for keeping the burner hot between jobs. It also has a wooden hand wheel, which never gets so hot as to burn the fingers. The construction provides an inside frame, so that when one iron is withdrawn the second rolls down and takes its place without the loss of heat. These features tend to increase its economy. It is pointed out that the furnace is well adapted for roofing and cornice work, having sufficient power to heat coppers of large size, and its construction is such that the wind cannot blow it out. It has been found by experience by tinner that the hinged iron arch frame is the most convenient, as it affords a longer rest or support for the coppers and confines the heat closer to them. This furnace is designed for heavy work for tinner. It is also made in another form, the No. 2, which is identical in every particular, with the exception that the top is constructed to hold a lead pot for plumbers' use as well as a rest for the soldering coppers.

CONTENTS.

	PAGE
The Lavigne Universal Automatic Screw Machine. Illustrated..	1
An Important "Trust" Decision.....	2
The Iron Industry of Austria.....	3
Putting a New Bow on a Wrecked Steamer.....	3
Forgings and the Machines Used in Producing Them.....	4
The New Building of the Western Electrical Instrument Company. Illustrated.....	5
American Tin Plate Works.....	6
A New System of Valves for Steam Engines, Air Engines and Compressors. Illustrated.....	7
Cast Iron Soil Pipe Combination.....	12
The Trans-Siberian Railway.....	12
A Chimney Struck by Lightning. Illustrated.....	12
A Novel Vise for Irregular Work. Illustrated.....	13
The Imperial Steel Works of Japan.....	13
Few Railroad Failures Are Recorded.....	14
The Crescent Emery Grinder. Illustrated.....	14
A New Sheet Zinc Mill.....	14
Legal Standing of So-Called "Trusts".....	15
Self Lubricating Axle Box. Illustrated.....	15
The Peace Conference and the Dum-Dum Bullet. Illustrated....	15
The Week.....	16
Editorials:	
Are Present Prices a Criterion?.....	17
The Failure of Mildred.....	18
National Bankruptcy Convention.....	18
A Gas Producer Decision.....	19
The New York Steel & Wire Company.....	19
Obituary.....	19
Pig Iron Production Increased.....	20
Personal.....	21
Information Wanted.....	21
Manufacturing:	
Iron and Steel.....	21
Machinery.....	21
National Tube Company Organized.....	22
The Iron and Metal Trades:	
A Comparison of Prices.....	23
Chicago.....	23
Philadelphia.....	24
Cleveland.....	25
Birmingham.....	26
St. Louis.....	26
Pittsburgh.....	27
Cincinnati.....	28
New York.....	28
The Belgian Iron Market.....	28
Metal Market.....	29
The New York Machinery Market.....	29
The Boston Machinery Market.....	30
The Tin Plate Wages.....	31
The Aetna-Standard Iron & Steel Company.....	31
Stocks.....	31
Hardware:	
Condition of Trade.....	32
Notes on Prices.....	33
Henry Diston & Sons' Buck Saws.....	34
South Dakota Retail Merchants' Association.....	34
Illinois Retail Hardware Association.....	35
Hardware Merchants' Advertising Cuts. Illustrated.....	36
"The Man in the Corner".....	36
Trade Winning Methods. Illustrated.....	37
A Heavy Hardware Conference.....	38
Interpretation of Contract.....	38
Requests for Catalogues, &c.....	39
Canadian Customs Requirements.....	39
Waterbury Rope Company Catalogue.....	39
The National Cutlery Company.....	39
Heller Brothers Company.....	39
Price-Lists, Circulars, &c.....	39
Trade Items.....	39
The Iron Age Advertising Prize Competition.....	40
Among the Hardware Trade.....	40
Miscellaneous Notes:	
Tucker & Dorsey Mfg. Company.....	40
Hot Air Registers and Ventilators.....	40
The Diamond Cycle Stand.....	40
Some New Goods.....	41
Automatic Swinging Hammock Couch.....	41
Full Moon Acetylene Lamp. Illustrated.....	41
Universal Powder Measures. Illustrated.....	41
Cronk's Wrought Steel Rake. Illustrated.....	41
The New Corbin Lock. Illustrated.....	42
Seamless Non-Detachable Collar Flush and Supply Pipe. Ill.	43
The Phenix Hanger and Fastener. Illustrated.....	43
Porch and Lawn Acetylene Generator. Illustrated.....	44
Hull's Improved No. 1 Bonanza Furnace. Illustrated.....	44
Current Hardware Prices.....	45
Current Metal Prices.....	52

Current Hardware Prices.

REVISED JULY 11, 1899.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, and are in many cases their regular prices to the small trade, lower prices being frequently quoted to the fair retail trade, both by the manufacturers and the jobbers.

Cut Prices.—In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, $\frac{1}{2}$ doz. \$3.00...33 $\frac{1}{2}$ @39 $\frac{1}{2}$ @10 $\frac{1}{2}$
North's...10 $\frac{1}{2}$
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent...40 $\frac{1}{2}$
Taplin's Perfection...5 $\frac{1}{2}$

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils... $\frac{1}{2}$ doz. 7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @
Hay-Budden, Wrought...8 $\frac{1}{2}$ @8 $\frac{1}{2}$ @
Horseshoe brand, Wrought...9 $\frac{1}{2}$ @9 $\frac{1}{2}$ @
Samson... $\frac{1}{2}$ doz. 7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @
Trenton, Wrought... $\frac{1}{2}$ doz. 8 $\frac{1}{2}$ @8 $\frac{1}{2}$ @

Imported—

Armitage's Mouse Hole...8 $\frac{1}{2}$ @9 $\frac{1}{2}$ @
Peter Wright's...9 $\frac{1}{2}$ @9 $\frac{1}{2}$ @

Anvill, Vise and Drill—

Millers Falls Co., \$18.00...20 $\frac{1}{2}$

Apple Parers—See Parers,

Apple, &c.

Augers and Bits—

Common Double Spur...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @75 $\frac{1}{2}$
Boring Machine Augers...70 $\frac{1}{2}$ @75 $\frac{1}{2}$
Car Bits, 12-in. twist...60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Jennings' Pattern:

Auger Bits...60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$
Car Bits...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @

Note.—Jobbers often quote lower prices on above goods.

Ford's Auger and Car Bits...40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Forstner Pat. Auger Bits...25 $\frac{1}{2}$
C. E. Jennings & Co., No. 10 ext. lip. R. Jennings' list...40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

No. 90. R. Jennings' list...50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @
Russell Jennings...25 $\frac{1}{2}$ @10 $\frac{1}{2}$ @
L'Hommiedieu Car Bits...15 $\frac{1}{2}$ @10 $\frac{1}{2}$ @15 $\frac{1}{2}$ @
Pugh's Black...20 $\frac{1}{2}$
Pugh's Jennings' Pattern...35 $\frac{1}{2}$
Snell's Auger Bits...70 $\frac{1}{2}$
Snell's Bell Hangers' Bits...50 $\frac{1}{2}$
Snell's Car Bits...60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$
Wright's Jennings Bits (R. Jennings' list)...50 $\frac{1}{2}$

Bit Stock Drills—

Standard List...60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Expansive Bits—

Clark's small, 18; large, 22...50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Lavigne's Clark's Pattern, No. 1, $\frac{1}{2}$ doz., 22; No. 2, 18...50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @
Stearns' No. 1, 22; No. 2, 18...40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @
Swan's...40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Gimlet Bits—

Common Double Out, gro. 22...75 $\frac{1}{2}$ @35 $\frac{1}{2}$
German Pattern...75 $\frac{1}{2}$ @50 $\frac{1}{2}$ @55 $\frac{1}{2}$
Double Out, makers' lists...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Hollow Augers—

Bonney's Adjustable, $\frac{1}{2}$ doz...\$18.00
Douglas's...33 $\frac{1}{2}$ @33 $\frac{1}{2}$ @10 $\frac{1}{2}$
Stearns', Common, No. 6...40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @
Stearns', all other numbers...30 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Ship Augers and Bits—

Ford's...40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$ @
Snell's...40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @
L'Hommiedieu's...15 $\frac{1}{2}$ @10 $\frac{1}{2}$ @15 $\frac{1}{2}$ @
Watrous's...40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Awl Hafts, See Hafts, Awl.

Awls—

Brad Awls:
Handled...gro. 22...\$2.75@3.10
Unhandled, Shouldered gro. 22...\$2.00@2.50
Unhandled, Patent...gro. 20@70 $\frac{1}{2}$ @

Peg Awls:
Unhandled, Patent...gro. 35@35 $\frac{1}{2}$ @
Unhandled, Shouldered gro. 25@70 $\frac{1}{2}$ @
Scratch Awls:
Handled, Common...gro. 35.00@3.75
Handled, Socket...gro. 11.00@12.00

Awl and Tool Sets—See

Sets, Awl and Tool.

Axes—

First Quality, best brands...\$5.25@5.50
First Quality, other brands...\$4.50@4.75
Jobbers' Special Brands:
Good Quality...\$1.25@1.50
Best Quality...\$3.00@3.25
Cheap Handled Axes...\$4.75@5.25
Good Handled Axes...\$5.00@5.25
Beveled, add 25c doz.

Axle Grease—See Grease, Axle.

Axles—

Concord, loose collar...54c 5 c
Concord, solid collar...54c 5 $\frac{1}{2}$ c
No. 1 Common...6 c 3 $\frac{1}{2}$ c
No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c
No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c
Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c
Nos. 7, 8, 11 to 14, 100 sets...extra 10 $\frac{1}{2}$
Nos. 15 to 18...50 $\frac{1}{2}$
Nos. 19 to 22...70 $\frac{1}{2}$

Iron, Steel.

Concord, loose collar...54c 5 c

Concord, solid collar...54c 5 $\frac{1}{2}$ c

No. 1 Common...6 c 3 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14, 100 sets...extra 10 $\frac{1}{2}$

Nos. 15 to 18...50 $\frac{1}{2}$

Nos. 19 to 22...70 $\frac{1}{2}$

Iron, Steel.

Concord, loose collar...54c 5 c

Concord, solid collar...54c 5 $\frac{1}{2}$ c

No. 1 Common...6 c 3 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14, 100 sets...extra 10 $\frac{1}{2}$

Nos. 15 to 18...50 $\frac{1}{2}$

Nos. 19 to 22...70 $\frac{1}{2}$

Iron, Steel.

Concord, loose collar...54c 5 c

Concord, solid collar...54c 5 $\frac{1}{2}$ c

No. 1 Common...6 c 3 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14, 100 sets...extra 10 $\frac{1}{2}$

Nos. 15 to 18...50 $\frac{1}{2}$

Nos. 19 to 22...70 $\frac{1}{2}$

Iron, Steel.

Concord, loose collar...54c 5 c

Concord, solid collar...54c 5 $\frac{1}{2}$ c

No. 1 Common...6 c 3 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14, 100 sets...extra 10 $\frac{1}{2}$

Nos. 15 to 18...50 $\frac{1}{2}$

Nos. 19 to 22...70 $\frac{1}{2}$

Iron, Steel.

Concord, loose collar...54c 5 c

Concord, solid collar...54c 5 $\frac{1}{2}$ c

No. 1 Common...6 c 3 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14, 100 sets...extra 10 $\frac{1}{2}$

Nos. 15 to 18...50 $\frac{1}{2}$

Nos. 19 to 22...70 $\frac{1}{2}$

Iron, Steel.

Concord, loose collar...54c 5 c

Concord, solid collar...54c 5 $\frac{1}{2}$ c

No. 1 Common...6 c 3 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14, 100 sets...extra 10 $\frac{1}{2}$

Nos. 15 to 18...50 $\frac{1}{2}$

Nos. 19 to 22...70 $\frac{1}{2}$

Iron, Steel.

Concord, loose collar...54c 5 c

Concord, solid collar...54c 5 $\frac{1}{2}$ c

No. 1 Common...6 c 3 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14, 100 sets...extra 10 $\frac{1}{2}$

Nos. 15 to 18...50 $\frac{1}{2}$

Nos. 19 to 22...70 $\frac{1}{2}$

Iron, Steel.

Concord, loose collar...54c 5 c

Concord, solid collar...54c 5 $\frac{1}{2}$ c

No. 1 Common...6 c 3 $\frac{1}{2}$ c

No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

No. 2, Solid Collar...4 $\frac{1}{2}$ c 4 $\frac{1}{2}$ c

Nos. 7, 8, 11 to 14...60 $\frac{1}{2}$ c

Bicycle Goods—

Lane's Cycle Hanger...33 $\frac{1}{2}$ @5 $\frac{1}{2}$

John S. Long's Son's 1899 list:

Balls...50 $\frac{1}{2}$

Chain...50 $\frac{1}{2}$

Parts...50 $\frac{1}{2}$

Spokes...50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—

See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Ad-

justers, Blind.

Blind Fasteners—See Fast-

eners, Blind.

Blind Staples—See Staples,

Blind.

Blocks—Tackle—

Common Wooden...75 $\frac{1}{2}$ @10 $\frac{1}{2}$ @75 $\frac{1}{2}$ @

Eddy's All Steel, Common Bushed...70 $\frac{1}{2}$

Eddy's All Steel, Bronze Bushed...60 $\frac{1}{2}$ @55 $\frac{1}{2}$

Haris All Steel, Common Bushed...50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Haris All Steel, Bronze Bushed...50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Ford's Star Brand, Self Lubricating...70 $\frac{1}{2}$

Hollow Steel, Ford's Pat. Star Brand...50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Lane's Pat. Adj., Perfect Safety and

Junior...30 $\frac{1}{2}$

Stowell's Novelty, Mal. Iron...50 $\frac{1}{2}$ @10 $\frac{1}{2}$

See also Machines, Hoisting.

Boards, Stove—

1899 List:

Zinc...80 $\frac{1}{2}$

Others...40 $\frac{1}{2}$

Boils—

Carriage, Machine, &c.—

Common, list Jan. 30, '95, 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Norway Iron, \$3.00, list Oct. 7, '94...75 $\frac{1}{2}$ @10 $\frac{1}{2}$ @75 $\frac{1}{2}$ @

Phila. Eagle, \$3.00 list...80 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Bolt Ends, list Jan. 30, '95, 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Machine, list June 19, '96...60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Note.—Jobbers' prices on Boils are

now generally lower than manufactur-

ers'.

Door and Shutter—

Cast Iron Barrel, Round Brass

Knob:

Inch...3 4 5 6 8

Per doz...\$0.27 .30 .33 .39 .66

Cast Iron Bottom, Japanned:

Inch...6 8 10

Per doz...\$0.83 1.05 1.65

Cast Iron Chain, Flat, Japanned:

Inch...6 8 10

Per doz...\$1.10 1.38 1.87

Cast Iron Shutter, Brass Knobs:

Primers—
Berdan Primers, \$1.00.....
B. L. Caps (Sturtevant Shells) \$1.00.....
All other primers.....\$1.00@1.10

Carpet Stretchers—
See Stretchers, Carpet.

Cartridges—

B. B. Caps, Con., Ball Sngd. \$1.90
B. B. Caps, Round Ball... \$1.19@1.18
Blank Cartridges:
25 C. F., \$5.50.....
25 C. F., \$7.00.....
25 cal. Rim, \$1.50.....
25 cal. Rim, \$2.75.....
Central Fire.....
Pistol and Rifle.....
Primed Shell and Bullets.....
Rim Fire Sporting.....
Rim Fire Military.....

Castors—

Bed.....
Plate.....
Plate, part Brass.....
Philadelphia.....
Martin's Patent (Phoenix).....
Payson's Anti-friction Furniture.....
Payson's Anti-friction Truck.....
Standard Ball Bearing.....
Tucker's Patent, low list.....

Cattle Leaders—

See Leaders, Cattle.

Chain—

American Coll. Cask Lots:
3-16 1/4 5-16 3/4 7-16 1/2 9-16
\$7.75 6.00 5.00 4.25 4-10 4-00 3.90
1/4 1/4 1 inch.
\$3.90 3.75 3.55 3.55
Less than Cask lots add 1-10c. per lb.
German Coll. list July 24, '97.....

German Hailer Chain, list July 24, '97.....

Trace, Wagon and Fancy Chains, list April, '98.....

Jack Chain, list July 10, '98.....

Iron.....

Gal. Pump Chain.....

Breast, Hitching and Rein Chains

Covert Sd. Works.....

Covert Mfg. Co.:.....

Breast.....

Halter.....

Heel.....

Rein.....

Stallion.....

Onida Combs and Eureka Weldless Coll and Halters.....

Nagara and Eureka Weldless Cow Ties.....

American Coll and Halters.....

American Cow Ties.....

Chalk—(From Jobbers.)

Carpenters', Blue.....

Carpenters', Red.....

Carpenters', White.....

See also Crayons.

Chalk Lines—See Lines.

Checks, Door—

Bardley's.....

Columbia.....

Elipse.....

Chisels—

Socket Framing and Firmer

Standard List.....

Buck Bros.....

Charles Buck.....

Swan's.....

L. & J. J. White.....

Tanged—

Tanged Firmers.....

Buck Bros.....

Charles Buck.....

L. & J. J. White, Tanged.....

Cold—

Cold Chisels, good quality, lb. 1 1/2@16c

Cold Chisels, fair quality.....lb. 12c

Cold Chisels, ordinary.....lb. 7@74c

Chucks—

Beach Pat., each \$8.00.....

Morse's Adjustable, each \$7.00.....

Skinner Patent Chucks.....

Combination Lathe Chucks.....

Independent Lathe Chucks.....

Improved Planer Chucks.....

Universal Lathe Chucks.....

Union Mfg. Co.:.....

Combination.....

Czar Drill.....

Geared Scroll.....

Independent.....

Union Drill.....

Universal.....

Face Plate Jaws.....

Clamps—

Adjustable, Hammers'.....

Adjustable, Stearns'.....

Cabinet, Sargent.....

Carriage Makers', P. S. & W. Co. 40@10c

Carriage Makers', Sargent's.....

Best, Parallel.....

R. L. Tool Co.'s Wrought Iron.....

Saw Clamps, Vice, Saw Fiers.....

Stearns Malleable, with Wrought Iron

Screw.....

Stearns Steel.....

U. S. Lock Co. 40@10c@10@10@5c

Cleaners, Walk—

Star Socket, All Steel.....

Star Shank, All Steel.....

Cleavers, Butchers'—

Foster Bros., Flat Ida, 30c; Rd. Hts., 40c

New Haven Edge Tool Co.'s.....

Nichols Bros., Flat hdl., 30c; Rd. hdl., 40c

Payette R. Plumb.....

P. S. & W.....

L. & J. J. White.....

Clippers—

Chicago Flexible Shaft Company:
Handy Toilet.....
Mascoite Toilet.....
Monitor Toilet.....
Stewart's Patent.....

Clips, Axle—

Eagle and Superior 1/4 and 5-16

inch.....

Norway, 1/4 and 5-16 inch.....

Cloth and Netting, Wire

—See Wire, etc.

Cocks, Brass—

Hardware list (Globe, Kerosene,

Lever Bibbs, Racking, etc.).....

70@70@5c

Coffee Mills—See Mills, Coffee.

Collars, Dog—

Brass, Pope & Stevens' list.....

Embossed, Gilt, Pope & Stevens' list.....

Leather, Pope & Stevens' list.....

Compasses, Dividers, &c.

Ordinary Goods.....

Bemis & Call Edw. & Tool Co.:.....

Dividers.....

Calipers, Call's Patent Inside.....

Calipers, Double.....

Calipers, Inside or Outside.....

Calipers, Wing.....

Compasses.....

J. Stevens A. & T. Co.....

Coolers, Water—

U. S. & Co.: 2-gal., \$3.70; 3-gal., \$3.20;

4-gal., \$3.60; 6-gal., \$4.75; 8-gal.,

\$7.30; 11-gal., \$11; 14-gal., \$14 each 60c

Coopers' Tools—

See Tools, Coopers'.

Cord— Sash—

Braided, Drab.....

Braided, White, lb.....

Cable Laid Italian.....

Common India.....

Cotton Sash Cord, Twisted.....

Patent Russia.....

Cable Laid Russia.....

India Hemp, Braided.....

India Hemp.....

Patent India.....

Pearl Braided, cotton.....

Massachusetts, White.....

Edgelyton Braided Cotton.....

Harmony Cable Laid Italian.....

Ostman Mills:

Crown, Solid Braided White.....

Braided, Giant, White.....

Pearless:

Cable Laid Italian.....

Cable Laid Russian.....

Cable Laid India.....

Braided India.....

Samson:

Braided, Drab Cotton.....

Braided, Italian Hemp.....

Braided, Linen.....

Braided, White Cotton.....

Silver Lake:

A quality, Drab, 40c.....

A quality, White, 35c.....

B quality, Drab, 35c.....

B quality, White, 30c.....

Italian Hemp, 40c.....

Linen, 37c.....

Wire, Picture—

Braided or Twisted.....

See Trade Report.

Corn Knives and Cutters

—See Knives, Corn.

Crackers, Nut—

Acme, Japaned, # gr. \$30.....

Acme, Nickel Plated, # gr. \$30.....

Turner & Seymour Mfg. Co.....

Cradles—

Grain.....

Crayons—

White Round Crayons, gross.....

Cases, 100 gro., \$4.50@5.00, at factory.

D. M. Stewart Mfg. Co.:.....

Metal Workers' # gr. \$2.50.....

Railroad, # gr. \$2.00.....

Rolling Mill, # gr. \$2.50.....

Soapstone Pencils, # gr. \$1.50.....

See also Chalk.

Creamery Pails—See Pails.

Creamery.

Crooks, Shepherds'—

Fort Madison, Heavy.....

Fort Madison, Light.....

Crow Bars—See Bars, Crow.

Cultivators—

Victor Garden.....

Curry Combs—

See Combs, Curry.

Cutters— Meat—

American.....

Each.....

Connors'.....

Nos.....

Each.....

Dixon's.....

Nos.....

Hale's.....

Nos.....

Home No. 1.....

Little Giant.....

Nos.....

\$32.00 \$48.00 \$44.00 \$72.00 \$68.00

Miles' Challenge, # doz.....

Nos.....

New Triumph No. 605, # doz.....

Woodruff's, # doz.....

Nos.....

Chadborn's Smoked Beef Cutter, # doz.....

Enterprise Beef Shavers.....

Slaw and Kraut

Henry Diss on & Son:

Slaw, C. n Grater, &c.....

Kraut Cutters 24 x 7, 96 x 8, 80 x 9.55

Kraut Cutters 36 x 12, 40 x 12.....

Tucker & Dorsey Mfg. Co.:.....

Kraut Cutters.....

Slaw Cutters, 1 Knife, # gr.....

Slaw Cutters, 2 Knife, # gr.....

Tobacco—

All Iron, Cheap.....

Enterprise.....

National, # doz.....

Sargent's, # doz.....

Washer—

Appleton's, # doz.....

Bonney's.....

Diggers, Post Hole, &c.—

Iwan's Improved Post Hole Auger.....

Iwan's Perfection Post Hole Digger.....

Samson, # doz.....

Dividers—See Compasses.

Dog Collars—See Collars, Dog.

Door Checks—

See Checks, Door.

Door Springs—

See Springs, Door.

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, # doz.....

#18; No. 2, #12; No. 3, #11; No. 4, #13.

Drawing Knives—

See Knives, Drawing.

Drills and Drill Stocks—

Common Blacksmiths' Drill.....

Blacksmiths' Self-feeding.....

Bench Drills, Stearns'.....

Breast, Millers Falls, each \$3.00.....

Breast, P. S. & W.....

Goodell Automatic Drills.....

Ratchet, Bignall & Keeler.....

Ratchet, Curtis & Curtis.....

Ratchet, Ingersoll's.....

Ratchet, Parker's.....

Ratchet, Weston's.....

Ratchet, Whitney's.....

Whitney's Patent Drill, No. 1, \$10.00;

Adjustable, No. 10, \$12.00.....

Twist Drills—

Standard List.....

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Ch

Qimlets—

Nail, Metal, Assorted, gro. \$1.50@2.00
Spike, Metal, Assorted, gro. \$3.25@3.75
Nail, Wood Handled, Assorted,
gro. \$4.00@4.50
Spike, Wood Handled, Assorted,
gro. \$5.00@5.25

Glass, American Window

List Jan. 1, 1898.

Small lots from store:
Eastern.....80¢@90¢
Western.....80¢@20¢@85¢
From Factory, with Frt. Allowance:
Carloads.....80¢@20¢
1000 boxes or more, Gulf Ports.....85¢@10¢
3000 boxes or more.....85¢@85¢@2½¢
5000 boxes or more.....85¢@2½¢

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush.
Eastern.....37½¢@50¢
List B, Cans (½ pts., pts., qts.).....33½¢@48¢
List C, Cans (½ gal., gal.).....25¢@45¢

Glue Pots—See Pots, Glue.

Grease, Axle—

Allerton's Axle:
10 Tins, 5 gr. \$9.00
30 Tins, 5 gr. \$2.00; 5 m. \$2.00
10 m. \$2.00
25 m. wood pails.....\$12.00
Dixon's Everlasting, 10 m. pails, ea. 85¢
Dixon's Everlasting, in bxs., 5 doz. 1 m.
\$1.20; 2 m. \$2.00
Lower grades, special brands,
5 gr. \$5.00@6.50

Grindstone Fixtures—

See Fixtures, Grindstone.

Gun Powder—See Powder.

Hack Saws—See Saws.

Hafts, Awl—

Peg Patent, Leather Top, gro. \$4.30
Peg Patent, Plain Top, gro. \$3.45
Sewing, Brass Ferrule, gro. \$1.50
Saddlers', Brass Ferrule, gro. \$1.35
Peg, Common, gro. \$1.25
Brad, Common, gro. \$1.15

Halters and Ties—

Covert Mfg. Co., Web an 1 Rope, 45¢@2¢
Covert's Saddlery Works', 96 list.....70¢

Hammers—

Handled Hammers—

Heller's Machinists'.....40¢@40¢
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50,
\$1.75.....40¢@10¢
Pegs, Stow & Wilcox.....40¢@40¢
Fayette B. Plumb:
Artisans' Choice, A. E. Nail, 40¢@12½¢
Engineers' and B. S. Hand, 60¢
Machinists' Hammers, 60¢
A. E. & A. E., Bell Face Nail, 40¢@12½¢
Other Nail Hammers, 50¢
Sargent's C. S. New List, 45¢@50¢

Heavy Hammers and Sledges—

3 lb. and under, lb. 45¢; 75¢@10¢@5¢
5 to 5 lb. lb. 36¢ 80¢
Over 5 lb. lb. 30¢
Note.—Lower net prices sometimes
made by jobbers.
Wilkinson's Smithe's.....9½¢@10¢ lb.

Handcuffs and Leg Irons

See Police Goods.

Handles—

Agricultural Tool Handles—
Hoe, Rake, Fork, etc. 60¢@10¢@60¢@10¢
Shovel, etc., Wood D Handle, 60¢@10¢

Cross-Cut Saw Handles—

Atkins'.....40¢
Champion.....45¢@45¢@10¢
Dixson's.....50¢
Ely's Perfection.....50¢ doz. \$3.00

Mechanics' Tool Handles—

Auger, assorted, gro. \$2.25@2.50
Auger, large, gro. \$2.75@3.00
Brad Awl, gro. \$1.40@1.50

Chisel Handles—

Apple Firmer, gro. ass'd. \$2.25@
\$2.50; large, \$2.75@3.00.
Hickory Firmer, gro. ass'd. \$2.25
@2.50; large, \$2.50@2.75.
Socket, gro. ass'd. Firmer, \$1.50@
\$1.80; Framing, \$2.50@2.75.
File, assorted, gro. \$1.00@1.15
Hammer, Hatchet, Axe, etc., 50¢@10¢
Hoe, Rake and Fork.....60¢@10¢@5¢
Shovel and Spade, Wood D Handle,
60¢@10¢
Hand Saw, Varnished, doz. 75¢@80¢
Not Varnished, 55¢@60¢
Plane Handles:
Jack, doz. \$2.25; Jack Bolted,
55¢@60¢
Fore, doz. \$2.38; Fore, Bolted,
70¢@75¢

Hangers—

Barn Door, New Pattern, Round
Groove, Regular:
Inch.....3 4 5 6 8
Doz.....\$1.25 1.68 2.16 2.64 3.50
Barn Door, New England Pattern,
Check Back Round Groove, Reg-
ular:
Inch.....3 4 5 6
Doz.....\$1.86 2.74 3.62 4.50

Blaglow & Dowse Co.

Paragon, No. 1, \$3.50; No. 2, \$4.50;
No. 3, \$5.50 per doz.

Chicago Spring Butt Co.

Friction.....35¢@35¢@10¢
Oscillating.....35¢@35¢@10¢
Big Twin.....35¢@35¢@10¢

Chisholm & Moore Mfg. Co.

Advance.....60¢@10¢
Cleveland.....60¢@10¢
Baggage Car Door.....50¢
Elevator.....40¢
Railroad.....55¢

Lane Bros.

Parlor, Standard.....40¢@10¢
Barn Door, Standard.....60¢@10¢
Covered.....60¢@10¢
Cycle, 7 doz. \$12.00.....33½¢@5¢
No. 50.....60¢@5¢
Parlor Door, New Model.....40¢@5¢
Lawrence Bros.:
Crown.....60¢@10¢
New York.....60¢@10¢@60¢@10¢
Sterling.....60¢@10¢

McKinney Mfg. Co.

No. 2, Standard, \$18.....60¢@10¢
No. 1, Special, \$19.....60¢@10¢

E. C. Stearns & Co.

Davis Parlor Door.....50¢@50¢
Gem Parlor Sliding Door.....50¢@10¢
Challenge.....50¢@50¢
Steel Single Track Parlor, 90.....50¢
Royal Parlor Door.....50¢
Warner's Pat.....20¢@10¢
Warner's Imp'd single.....40¢@10¢

Stowell Mfg. and Foundry Co.

Badger.....60¢@10¢
Baggage Car Door.....33½¢
Climax Anti-Friction.....65¢@5¢
Elevator.....40¢
Interstate.....60¢@10¢
Matchless.....60¢@10¢
Nansen.....60¢@10¢
Parlor Door.....50¢@10¢
Railroad.....55¢@5¢
Street Car Door.....50¢@10¢
Steel Nos. 300, 400, 500.....45¢@15¢
Wild West.....50¢@10¢
Zenith for Wood Track.....55¢@5¢

Taylor & Boggis Foundry Co.

Kladder's.....50¢@50¢@10¢
Van Wagoner & Williams Hdw. Co.:
American Trackless.....33½¢@10¢

Wilcox Mfg. Co.

Aurora Steel Endless.....60¢
Bike Roller Bearing.....60¢@10¢
Bike Steel Endless.....60¢@10¢
C. J. Roller Bearing.....60¢@10¢
Cycle Ball Bearing.....60¢@10¢
Dye Steel.....60¢@10¢
Economical Single Track, 50 and 100.....50¢
L. T. Roller Bearing.....60¢
Machinists'.....60¢@10¢
New Richards.....60¢
O. K. Roller Bearing.....70¢
Prindle Improved.....60¢@10¢
Richards' Improved.....60¢@10¢
Richards' Single Track.....50¢@10¢
Wilcox Dwarf Roller Bearing.....40¢@10¢

Wilcox-Ives

Wilcox Tandem Roller Bearing.....60¢@10¢

Wilcox Trolley Ball Bearing

60¢@10¢

Wilcox Trolley Roller Bearing

50¢

Wilcox Trolley Roller Bearing

50¢

Wood Track.....60¢

Harness Menders—See Menders.

Harness Snaps—See Snaps.

Hasps—

McKinney's Perfect Hasp, 7 doz. \$1.10
40¢@10¢

Wrought Hasps, Staples, etc.—See Wrought Goods.

Hatchets—

Best Brands.....40¢@12½¢@50¢@5¢
Cheaper Brands.....50¢@10¢@60¢@5¢
Note.—Net prices often made.

Hay and Straw Knives—

See Knives.

Hinges—

Blind Hinges—

Lull & Porter:
No. 1.....1 1½ 2 2½
Doz. pair, \$0.47 .45 .50 .55
1898 Old Pattern:
No. 1.....1 3 5
Doz. pair, \$0.55 1.00 2.00
Parker.....75¢@10¢@75¢@10¢
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick,
10¢
Reading's Gravity.....75¢@10¢
Sargent's, Nos. 1, 3, 5, 11, 13, 75¢@75¢@10¢
Wrightsville Hardware Co.:
Acme, Lull & Porter.....80¢@10¢
Buffalo Gravity Locking, Nos. 1, 3
and 5.....80¢@10¢
Champion Gravity Locking, No. 75.....80¢@10¢
1898, Old Pat'n, Nos. 1, 3 & 5.....80¢@10¢
Tip Pattern, Nos. 1, 3 and 5.....80¢@10¢
Double Locking, Nos. 20 and 25.....75¢
Empire, Nos. 101 and 103.....80¢
Nagara Gravity Locking, Nos. 1, 3
and 5.....80¢@10¢
Noiseless, Nos. 50, 60, 65 and 55.....80¢
O. S. Lull & Porter.....80¢@10¢
Pioneer, Nos. 080, 45 and 5½.....75¢
Steamboat Gravity Locking, No. 10.....80¢@10¢
Stanley's Steel Gravity Blind Hinges,
7 doz. sets \$1.30.....40¢@10¢

Gate Hinges—

Clark's or Shepard's—Doz. sets:
No. 1.....1 1½ 2 2½
Hinges with Latches, \$1.40 1.75 3.25
Hinges only.....0.92 1.40 2.40
Latches only.....0.45 .45 .80
New England:
With Latch.....doz. \$1.45@1.50
Without Latch.....doz. \$1.30@1.35
Reversible Self-Closing:
With Latch.....doz. \$1.70@1.75
Without Latch.....doz. \$1.30@1.35
Western:
With Latch.....doz. \$1.75@1.80
Without Latch.....\$0.75@0.75

Spring Hinges—

Holdback, Cast Iron.....gro. \$6.50@6.75

Non-Holdback, Cast Iron.....gro. \$5.50@5.75

J. Bardsley:

Bardsley's Patent Checking.....15¢
Bommer Bros.:
Bommer's.....40¢
Chicago Spring Butt Co.:
Chicago.....30¢
Garden City Engine House.....30¢
Keene's Saloon Door.....30¢
Lawson Mfg. Co.:
Matchless.....25¢
Matchless Pivot.....40¢
Payson Mfg. Co.:
Oblique, Dbl. Acting.....50¢@50¢
E. C. Stearns & Co.:
Nos. 45 and 51.....70¢
Stover Mfg. Co.:
Ideal, No. 18, Detachable, 7 gr.....
Ideal, No. 4.....7 gr. \$2.00
New Idea No. 1.....7 gr. \$2.00
New Idea, Double Acting.....45¢
Van Wagoner & Williams Hdw. Co.:
Acme.....30¢@5¢
American.....30¢
Columbia, No. 14.....7 gr. \$2.00
Columbia, No. 18.....7 gr. \$2.00
Crown.....30¢
Gem.....30¢
Knoxall.....7 gr. \$2.00
Oxford.....30¢

Wrought Iron Hinges—

Strap and T Hinges, etc., list Mar. 15, 1898:

Light Strap Hinges.....70¢
Heavy Strap Hinges.....70¢@10¢
Light T Hinges.....60¢@5¢
Heavy T Hinges.....60¢@5¢
Extra Heavy T Hinges.....70¢
Note.—Change in base discounts. See Trade Report

Roller Plate.....70¢@70¢@10¢

Screw Hook 6 to 12 in. lb. 3 ¼ @ 3 ½ c

and Strap 22 to 36 in. lb. 3 ¾ @ 3 ½ c

Hoes—

Scovill and Oval Pattern.....60¢@60¢@10¢

Grub. list Feb. 23, 1899.....70¢@10¢@75¢

D. & H. Scovill.....35¢@35¢@5¢

Handled—

1895 or Old List:
Cotton, Field, Planters', etc.....60¢@10¢@60¢@10¢@3¢

1898 or High List:
Field and Garden.....60¢@10¢@5¢@5¢
Ladies', Boys', Toy and Onton.....75¢@12½¢@2¢
Street and Mortar.....75¢@15¢@2¢
Cotton.....75¢@10¢@2½¢@2¢
Planters'.....75¢@10¢@2½¢@2¢
Weeding.....75¢@10¢@2½¢@2¢
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.

Ft. Madison Crescent Cultivator Hoe, per doz. \$3.75

Ft. Madison Mattock Hoe, 7 doz. \$4.00

Ft. Madison Sprouting Hoe, 7 doz. \$4.50

Ft. Madison Dixie Tobacco Hoe.....75¢@10¢@2¢

Kretzinger's Cut Easy, per doz. \$4.50

Warren Hoe.....60¢@10¢

Hog Rings and Ringers—

See Rings and Ringers.

Hoisting Apparatus—

See Machines, Hoisting.

Hollow Ware—

See Ware, Hollow.

Holders—

Bit—
Angular, 7 doz. \$24.00.....45¢@10¢

File and Tool—

Nicholson File Holders and File Hand-
les.....33½¢

Hooks—

Cast Iron—

Bird Cage, Reading.....60¢@70¢

Bird Cage, Sargent's List.....50¢@50¢@5¢

Clothes Line, Sargent's List.....50¢@50¢@5¢

Clothes Line, Stowell's.....70¢@5¢

Clothes Line, Reading List.....85¢@10¢@85¢@10¢@10¢

Coat and Hat, Stowell's.....70¢@5¢

Coat and Hat, Reading.....70¢@75¢

Coat and Hat, Sargent's List.....50¢@10¢

Coat and Hat, Wrightsville list.....70¢@10¢

Harness, Reading List.....70¢@10¢@75¢

Wire—

Belt.....30¢@10¢@30¢@20¢

Atlas, Coat and Hat.....50¢@50¢@10¢

Wire Coat and Hat:
Acme.....60¢@80¢@5¢

B. B.....70¢@70¢@5¢

Gem.....60¢@5¢

Bright Wire Goods—See Wire.

Wrought Iron—

Box, or Case, Octagon Steel.....doz. \$2.00@2.15

Cotton.....doz. \$1.00@1.10

Picture, T. & S. Mfg. Co.....75¢

Tassel, T. & S. Mfg. Co.....50¢@10¢

Wrought Staples, Hooks, etc.—See Wrought Goods.

Miscellaneous—

Bush, Light, doz. \$5.00; Medium,
\$5.50; Heavy, \$6.00

Grass.....Nos. 1 2 3 4

Best.....\$1.00 1.75 2.00

Common.....\$1.50 1.50 1.50 1.75

Potato and Manure.....75¢@15¢

Whiffletree.....lb. 4½¢

Hooks and Eyes:

Brass.....70¢@10¢@75¢

Malleable Iron.....75¢@10¢

Covert Saddlery Works' Self Locking
Gate and Door Hook, 4 in. 7 gross
\$13.00; 6 in. \$17.30.....70¢

Crown Picture.....60¢

Bench Hooks—See Bench Stops.

Corn Hooks—See Knives, Corn.

Horse Nails—See Nails, Horse.

Horseshoes—

See Shoes, Horse.

Hose, Rubber—

Garden Hose, ¾-inch:

Competition.....ft. 4¼ @ 5¼ c

3-ply Standard.....ft. 5¼ @ 6 c

4-ply Standard.....ft. 6¼ @ 6¼ c

3-ply extra.....ft. 6¼ @ 7½ c

4-ply extra.....ft. 7¼ @ 8½ c

High Grade.....ft. 9 @ 11 c

Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 5¼ @ 6c

Fair quality.....ft. 7 c

Good quality.....ft. 8 @ 8½ c

Extra 10¢ often given on most of these Hinges.

Irons—

From 4 to 10.....lb. 2½ @ 3¼ c

B. B. Sad Irons.....lb. 2¼ c

Chinese Laundry.....lb. 4¼ @ 4¼ c

Chinese Sad.....lb. 3¼ @ 3¼ c

Mrs. Potts', per set:
Nos. 50 55 60 65

70¢@77c 65¢@72c 75¢@81c 70¢@76c

New England Pressing.....lb. 3c

Soldering—

Soldering Coppers.....lb. 25¢@26c

Covert Mfg. Co.....35¢@25¢

Pinking—

Pinking Irons.....doz. 50¢@80c

Jack Screws—See Screws.

Lemon Squeezers—

See Squeezers, Lemon.

Lifters, Transom—

Dickson:
 3 x 4 ft. x 1/2" \$100 \$10.00
 Other sizes iron 70¢10¢10¢
 O her size, Brass 70¢10¢
 Excelsior 60¢60¢10¢
 Payson's:
 Solid Grip Nos. 303 and 304, \$100,
 \$11.00
 Other sizes 70¢10¢

Lines—

Wire Clothes, Nos. 18 19 30
 100 feet \$2.50 \$2.50 \$3.00
 75 feet \$1.50
 Ossawa Mills.
 Crown Solid Braided Chalk 33¢45¢
 Mason's, No. 0 to No. 5 30¢60¢10¢
 Silver Lake Braided Chalk, No. 0, \$6.00;
 No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50;
 No. 4, \$8.00; No. 5, \$8.50
 Gr. 30¢

Locks, &c.— Cabinet—

Cabinet Locks 33¢40¢

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading 60¢60¢10¢
 R. & E. Mfg. Co. 50¢10¢60¢55¢
 Sargent & Co. 30¢60¢10¢
 S. B. & Co. Locks, Knobs, &c. 40¢40¢55¢
 Snow's Victor 50¢10¢

Elevator—

Stowell's 33¢45¢

Padlocks—

See Trade Report.

Wrought Iron, list Dec. 3, '97, 70¢10¢75¢

Dog Collar, S. B. Co. 40¢

R. & E. Mfg. Co. Wrt Steel & Brass, 50¢

S. B. & Co. 40¢

Sash, &c.—

Fitch's Patent 65¢10¢

Ives' Patent 62¢10¢60¢10¢

Payson's Perfect 70¢

Payson's Signal (new list) 75¢10¢

Reading 60¢10¢10¢70¢

Machines—**Boring—**

Without Augers.

Upright. Angular.

Douglas \$2.50 \$3.00

Jennings 2.50 3.00

Mills' Falls 5.75

Well's, Rice's Pat. 2.50 2.75

Fluting—

Crown Jewel, 6 in. \$2.50@2.75

Hoisting—

Moore's Anti-Friction Differential Pul-

ley Block 30¢

Moore's Hand Hoist, with Lock Brake, 20¢

Washing—

Wayne American, No. 2, \$27.50

Western Star, No. 2, 27.50

Western Star, No. 3, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

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St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

St. Louis, No. 41, 30.00

Philadelphia:

All Styles except A and E. 70¢10¢
 Style A, all Steel 60¢10¢
 Style E, Low Wheel 60¢10¢
 Style E, High Wheel 60¢10¢
 Racine 60¢10¢10¢

Nails—

Cut and Wire. See Trade Report.

Wire Nails and Brads, Papered.

List May 1, '92.

80¢10¢10¢80¢10¢10¢55¢

Hungarian, Finishing, Upholsterers', &c.

See Tacks.

Horse—

Nos. 6 7 8 9 10

A. C. 25¢ 23¢ 22¢ 21¢ 21¢

American 9¢ 9¢ 9¢ 9¢ 9¢ net

Ausable 28¢ 26¢ 25¢ 24¢ 23¢

Capewell 19¢ 18¢ 17¢ 16¢ 16¢10¢55¢

C. H. K. 25¢ 23¢ 22¢ 21¢ 21¢

Chaplain 28¢ 26¢ 25¢ 24¢ 23¢

Clinton Fin. 19¢ 17¢ 16¢ 15¢ 14¢30¢55¢

Maud S. 25¢ 23¢ 22¢ 21¢ 21¢

Neponset 23¢ 21¢ 20¢ 19¢ 18¢

Putnam 23¢ 21¢ 20¢ 19¢ 18¢33¢45¢

Vulcan 23¢ 21¢ 20¢ 19¢ 18¢

Picture—

1 1/2 2 2 1/2 3 3 1/2 in.

Brass Head. 90 95 1.00 1.05 1.10 gro.

Por. Head. 85 90 95 1.10 1.15 gro.

Nippers, See Pliers and Nippers.**Nut Crackers—**

See Crackers, Nut.

Nuts—List Feb. 1, 1899.

List Feb. 1, '99.

Cold Punched. Off

Mfrs. or U. S. Standard list.

Hexagon, plain 5.10@5.20c

Square, plain 5.10@5.20c

Square, C. T. & R. 4.90@5.00c

Hexagon, C. T. & R. 5.40@5.50c

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stan'd.

Square 5.30@5.40c

Hexagon 5.70@5.80c

Oakum—

Best or Government lb. 5¢4c

Navy lb. 4¢3c

U. S. Navy lb. 5¢4c

Plumbers' Spun Navy 2¢4c

In carload lots 1/4 lb. off f o b. New York.

Oil Tanks—See Tanks, Oil.**Oilers—**

Brass and Copper 60¢10¢60¢

Tin or Steel 70¢70¢10¢

Zinc 70¢70¢55¢

Malleable, Hammers' Improved, No. 1, \$3.00; No. 2, \$4; No. 3, \$4.40

Malleable, Hammers' Old Pattern, same list. 50¢10¢

Wilnot & Hobbs Mfg. Co. 70¢10¢75¢

Openers, Can—

French doz 35c

Iron Handle doz 60¢75c

National, 1/2 gro. \$1.75@2.00

Sardine Scissors doz 22.00@22.10

Sprague, Iron or Wood Handles doz 40¢45¢

Stowell's 75¢10¢

Packing—**Rubber—**

Standard, fair quality 70¢10¢75¢

Inferior quality 75¢10¢80¢

Extra 60¢55¢60¢10¢55¢

Jenkins' Standard, 1/2 doz 80¢

Jenkins' Standard, 1/2 doz 80¢

Miscellaneous—

American Packing 9@10c lb.

Cotton Packing 13@14c lb.

Italian Packing 10 1/2@11 1/2c lb.

Jute 5@5 1/2c lb.

Russia Packing 12@13c lb.

Pails—**Creamery—**

S. S. & Co., with gauges. No 1 \$5.25;

No. 2, \$5.50 per doz. 15¢

Galvanized—

Inch. 10 12 14

Water, Standard, gro. \$18.00 \$21.00 \$24.00

Water, Competi-

tion, gro. 17.00 19.50 22.00

Fire, gro. 22.00 25.00 28.00

Well, gro. 23.00 26.00 27.00

Pans—**Dripping—**

Large Sizes lb. 4 @ 4 1/2c

Small Sizes lb. 4 1/2 @ 5 c

Fry—

Standard List 80¢80¢10¢

Roasting and Baking—

Columbian, S. S. & Co., Nos. 5, per doz.

\$10; 10, \$11.50; 20, \$13; 30, \$15. 60¢

Simplex No. 08, per doz. \$7.00; No. 09,

\$8.50 60¢

Paper—**Building Paper—**

Per roll

Rosin Sized Sheathing: 500 sq. ft.

Light wt., 20 sq. ft. to lb. \$0.35@0.40

Medium wt., 17 sq. ft. to lb. \$0.55@0.60

Heavy wt., extra quality, \$0.95@1.05

Barrett's Water Proof Sheathing, ..

\$1.35@1.75

Medium Grades Water Proof

Sheathing, \$0.80@1.25

Deafening Felt, 9, 6 and 4 1/2 sq. ft.

to lb., ton. \$2.50

Tarred Paper.

1 ply (roll 500 sq. ft.), ton \$35.00@37.00

2 ply, heavy, roll 100 sq. ft. 90c

2 ply, light, roll 100 sq. ft. 75c

3 ply, heavy, roll 100 sq. ft. \$1.20

3 ply, light, roll 100 sq. ft. \$1.00

Sand and Emery—

List April 13, 1886 50¢10¢50¢

Parers—**Apple—**

Advance doz. \$4.50

Baldwin doz. \$5.00

Bonanza each \$5.00

Dandy doz. \$7.50

Eureka 1888 each \$16.00

Family Bay State doz. \$12.00

Hudson's Little Star doz. \$4.00

Hudson's Rocking Table doz. \$5.50

Improved Bay State per doz. \$27.00@30.00

New Lightning doz. \$5.50

Reading 75 doz. \$4.00

Turn Table doz. \$4.50

White Mountain doz. \$4.00

Potato—

Saratoga doz. \$5.50

White Mountain doz. \$4.50

Paris Green—

Arsenic, kegs or casks, lb. 12 @ 12 1/2c

Kegs of 100 to 175

pounds, lb. 12 1/2@13 c

Kits of 14, 25 and 56

pounds, lb. 13 1/4@14 c

Paper boxes 2 to 5 pnds, lb. 13 1/4 @ 14c

Paper boxes 1 pound, lb. 14 @ 14 1/2c

Paper boxes 1/2 pound, lb. 15 @ 15 1/2c

Paper boxes 3/4 pound, lb. 16 @ 16 1/2c

Note.—These prices are sometimes

shaded by jobbers.

Picks and Mattocks—

List Feb. 23, 1899 70¢70¢55¢

Pinking Irons—

See Irons, Pinking.

Pins—**Escutcheon—**

Brass 60¢60¢55¢

Iron, list Nov. 11, '85. 60¢60¢55¢

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in. 60¢

Extra Heavy, 2-6 in. 65¢

Fittings 60¢10¢10¢70¢

Pipe, Wrought—

Factory Shipments.

List February, 1899.

Plain and Galvanized:

Carload lots 50¢10¢10¢55¢

Less than carload lots. 50¢10¢10¢

Screw and Socket Casing, 40¢

Inserted Joint Casing, 35¢

Cold Drawn Seamless Steel Tubing. 60¢

Planes and Plane Irons—**Wood Planes—**

Molding 40¢2 1/2@40¢55¢

Bench, First quality 45¢10¢45¢10¢55¢

Bench, Second quality 50¢10¢50¢10¢55¢

Bailey's (Stanley R. & L. Co.)

50¢10¢10¢50¢10¢10¢10¢

Gage Self Setting 35¢

Iron Planes—

Bailey's (Stanley R. & L. Co.)

50¢10¢10¢50¢10¢10¢10¢

Chaplin's Iron Planes 50¢10¢

Miscellaneous

Pulleys—

Hay Fork, Swivel or Solid Eye doz. \$1.50
 Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, # doz. \$12.00 40%
 Hay Fork, Stearns' No. 15 & 25 # doz. \$1.75 40%
 Hay Fork, Stearns' No. 35 & 45 # doz. \$2.00 40%
 Hay Fork, Stearns' Nos. 50 & 66, #2.25 40%
 Hot House, Awning, &c. 60¢@60¢10%
 Japanned Clothes Line 60¢@60¢10%
 Japanned Screw 70¢@10¢10%
 Japanned Slide 70¢@10¢10%
 Stowell's Ceiling or End, Anti-Friction 40%
 Stowell's Dumb Walter, Anti-Friction 50%
 Stowell's Electric Light 33¢10%
 Stowell's Slide, Anti-Friction 50%
 Sash (Auger Mortise):
 Common Sense, 1 1/2 in., # doz., 18¢; 2 in., 20¢.
 Empire 1 1/2 in., 17¢; 2 in., 19¢
 I. C. 1 1/2 in., 15¢; 2 in., 17¢
 Ideal No. 18, # doz. 15¢10%
 Improved 1 1/2 in., 17¢; 2 in., 19¢
 Niagara 1 1/2 in., 16¢; 2 in., 17¢
 No. 20, Troy 1 1/2 in., 15¢; 2 in., 17¢
 Star 1 1/2 in., 16¢; 2 in., 17¢
 Acme 1 1/2 in., 15¢; 2 in., 19¢
 Tackle Blocks—See Blocks.

Pumps—

Cistern 60¢10%
 Pitcher Spout 75¢
 Pump Leathers, all sizes, # gro. \$6.00
 Flint & Walling's Fast Mail 60%
 Myer's Pumps, low list 50%
 Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co. 30%

Punches—

Revolving doz. \$5.50@5.75
 Saddlers' or Drive, good, # doz. 60¢@65¢
 Spring, good quality \$1.70@1.80
 Bemis & Call Co.'s Cast Steel Drive, 50¢@55¢
 Bemis & Call Co.'s Check 55¢
 Bemis & Call Co.'s Spring 50¢@55¢
 Bemis & Call Co.'s Springfield Socket, 65¢
 Niagara Hollow Punches 45¢
 Spring, Leach's Pat. 15¢
 Steel Screw, B. & K. Mfg. Co. 50%
 Tinnars' Hollow, P. S. & W. Co. 30¢@35¢
 Tinnars' Solid, P. S. & W. Co., # doz., \$1.44 55%

Rail—**Barn Door, &c.—**

Barn Door, Light, 1/2 in., 1/2 3/4 3/8
 100 feet \$1.50 \$1.95 \$2.50
 B. D., for N. E. Hangers:
 Small, Med. Large.
 100 feet \$1.50 2.00 2.50
 Sliding Door, Bronzed Wrt Iron, ft. 6 1/4
 Sliding Door, Iron Painted, # 4 @ 2 1/4
 Sliding Door, Wrought Brass, 1 1/2 in. lb. 36¢
 Cronk's Double Braced Steel Rail, # foot 3¢
 Lanes' O. N. T., # 100 ft. \$2.40
 Lanes' Standard, # ft. 3 1/4¢
 McKinney's None Better, # ft. 3 1/4¢
 McKinney's Standard, # ft. 3 1/4¢
 Moore's, Wrt. Bracket, Steel, # ft. 3 1/4¢
 Stowell's Steel Rail 35¢10%
 Terry's Steel Rail # ft. 3 1/4¢

Rakes—

1895 or old list often used:
 C. S. Rakes 60¢10¢10%
 Malleable Rakes 70¢10¢10%
 Association List:
 Cast Steel 75¢5¢10%
 Malleable 70¢10%
 Fort Madison Red Head Lawn \$3.00
 Fort Madison Blue Head Lawn \$2.85

Rasps, Horse—

Diston's 75%
 New Nicholson Horse Rasp 70¢10%
 See also Files.

Razor Stropps—

See Stropps, Razor.

Reels—**Fishing—**

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Popolo and Salmon, Single Action, Multiplying and Quadruple, all sizes, 25%
 Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PN, 202 PR and PN, 304 P and PN, 00304P and PN, 502 and 502N, 602 and 602N, 02084N, Competitor, 50%
 Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904P and PN, 0924 and 0924N, 5009N and PN 40¢10%

Registers—

For points on Mississippi River and East:
 Black Japanned 40%
 White Japanned 30%
 Bronzed Finishes 40%
 Nickel Plated 40%
 Electro Plated in Brass, &c. 40%
 White Porcelain 30%
 Solid Brass and Bronze Metal, 25%
 Note—Higher prices are quoted in territory further West.

Rings and Ringers—**Bull Rings—**

Steel \$0.90 1.00 1.05 doz.
 Copper 1.10 1.20 1.25 doz.

Hog Rings and Ringers—

Hill's Rings, # gro. boxes, \$3.25@3.50
 Hill's Ringers, G. I. doz. 50¢55¢
 Blair's Rings # gro. \$3.75@4.00
 Blair's Ringers # doz. 55¢@60¢
 Brown's Rings # gro. \$3.75@4.00
 Brown's Ringers # doz. 55¢@60¢
 Perfect Rings # gro. \$7.00@7.50
 Perfect Ringers, # doz. 75¢@80¢

Rivets and Burrs—

Copper 40¢10¢50%
 Iron or Steel:
 Tinnars' 60¢10¢10%
 Miscellaneous 60¢10¢10%

Rivet Sets—See Sets.**Roasting and Baking****Pans—See Pans, Roasting and Baking.****Rollers—**

Acme, Stowell's Anti-Friction 50¢10%
 Barn Door, Sargent's list, 60¢10¢10%
 Lane's, Stay 33¢10%
 Stowell's Barn Door Stay, # doz. \$1.00

Rope—

Manila, 7-16 in. and larger.
 lb. 10 @ 10 1/4¢
 Manila, 1/4-inch lb. 10 1/4¢@10 1/2¢
 Manila, 1/2 and 5-16 in. lb. 11 @ 11 1/4¢
 Manila, Tarred Rope, 15 thread lb. 10 @ 10 1/4¢
 Manila Hay Rope Med'm lb. 10 @ 10 1/4¢
 Sisal, 7-16 in. and larger, lb. 8 1/4¢ @ 8 1/2¢
 Sisal, 1/4-inch lb. 9 @ 9 1/4¢
 Sisal, 1/2 and 5-16 in. lb. 9 1/4¢ @ 9 1/2¢
 Sisal, Hay Rope, # to 10 ply lb. 8 1/4¢ @ 8 1/2¢
 Steel, Med'm Lath Yarn, lb. 8 @ 8 1/4¢
 Cotton Rope:
 Best, 1/4-in. and larger, lb. 13 @ 14 ¢
 Med'm, 1/4-in. and larger lb. 10 @ 12 ¢
 Com., 1/4-in. and larger, lb. 8 @ 10 ¢
 Jute Rope lb. 8 1/4¢ @ 8 ¢

Wire Rope—

List Sept. 1, '98. All kinds, 7 1/2¢@8 1/2¢10%

Ropes, Hammock

Covert Saddlery Works 70%

Rules—

Boxwood, .75¢10¢10¢10¢75¢10¢10¢
 Ivory 40¢10¢10¢10¢40¢10¢10¢10%
 Lufkin's Steel 50¢10%
 Lufkin's Lumber 50¢10%
 Stanley R. & L. Co.; Boxwood 75¢10¢10¢75¢10¢10¢10¢10%
 Ivory 40¢10¢10¢40¢10¢10¢10%

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cords—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—

See Stuffers or Fillers, Sausage.

Saws—

Note.—Extra 5¢@10% often given on Circulars, Cross Cuts, &c. and extra 5¢@7 1/2% on Hand, Butcher, &c.
 Atkins' Circular 50%
 Atkins' Band 50%
 Atkins' Cross Cuts 40%
 Atkins' Mulay, Mill and Drag 50%
 Atkins' One-Man Saw 40¢10%
 Atkins' Wood Saws 40¢10%
 Atkins' Hand, Compass, &c. 40%
 Diston Circular Sash and Inset 50%
 Tooth 50%
 Diston Band 2 to 14 in. wide 80%
 Diston Band 3 to 14 70%
 Diston Crosscuts 55%
 Diston Narrow Crosscuts 55%
 Diston Mulay, Mill and Drag, J. 50%
 Diston Framed Woodsaws 35%
 Diston Wood Saw Blades 40%
 Diston Woodsaw Rols 25%
 Diston Hand Saws, Nos. 12, 99, 9, 16, 1100, Ds, 120, 77, 8 25%
 Diston Hand Saws, Nos. 7, 107, 10 1/2, 3, 1, 0, 00, Combination 30%
 Diston Compass, Keyhole, &c. 25%
 Diston Butcher Saws and Blades 45¢
 C. E. Jennings & Co.'s 25¢@30¢5%
 Peace Circular and Mill 45¢10%
 Peace Cross Cuts, list Jan. 1, '93, 45¢10¢5%
 Peace Hand, Panel and Rip 25¢10¢5%
 Richardson's Circular and Mill 45¢10%
 Richardson's X Cuts, list Jan. 1, '93, 45¢10¢5%
 Richardson's Hand, &c. 25¢10¢5%
 Simonds' Circular Saws 45¢50%
 Simonds' Crescent Ground Cross Cut 35%
 Simonds' One-Man Cross Cuts 40¢10%
 Simonds' Gang Mill, Mulay and Drag Saws 45¢@45¢5%

Hack Saws—

Diston Concave Blades 25%
 Diston Keystone 30%
 Diston Hack Saw Frames 30%
 Griffin's complete 50¢50¢10%
 Griffin's Hack Saw Blades 50¢50¢10%
 Star Hack Saws and Blades 15¢10%

Scroll—

Barnes' No. 7, \$15 25%
 Barnes' Velocipede Scroll Saw, \$18 20%
 Barnes' Scroll Saw Blades 40%
 Lester, complete, \$10.00 15¢10%
 Rogers, complete, \$4.00 15¢10%

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scale Beams—**

See Beams, Scale.

Scales—

Family, Turnbull's 30¢@30¢10%
 Hatch, Counter, No. 171, good quality doz. \$17.00@18.00
 Hatch, Tea, No. 161 doz. \$5.75@6.00
 Union Platform, Plain \$2.00@2.10
 Union Platform, Striped \$2.15@2.25
 Chatillon's Eureka 25%
 Chatillon's Favorite 40%
 Chatillon's Grocers' Trip Scales 50%
 Pelouze Scales—Family, Candy, Grocers and Postal 33¢10%
 "The Standard" Portables 40¢50%
 "The Standard" R. R. and Wagon 60%

Scrapers—

Box, 1 Handle doz. \$2.00
 Box, 2 Handle doz. \$3.00@4.00
 Ship, No. 1, doz. \$3.50; No. 2, \$2.25@2.40
 Adjustable Box Scraper (R. R. & L. Co.) \$6.00 40¢10%
 Foot, W. E. Pratt Mfg. Co. # doz. \$1.15@1.25
 Ship, R. L. Tool Co. 10%

Screen Window and Door

Frames—See Frames.

Screw Drivers—

See Drivers, Screw.

Screws—

Bench and Hand—
 Bench, Iron doz. 1 in., \$2.30; 1 1/4, \$2.65; 1 1/2, \$3.01
 Bench, Wood, Beech, # doz. \$2.00@2.50
 Hand, Wood 30¢10¢10¢10%
 Hand, Grand Rapids 35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Jan. 30, '95 70¢15¢@70¢15¢10%
 Coach and Lag, Gimlet Point, list Jan. 30, '95 70¢10¢@70¢10¢10%
 Hand Rail, list Jan. 1, '91 82 1/2¢10%

Jack Screws—

Millers Falls 50¢10¢10%
 Millers Falls, Roller 50¢10%
 P. S. & W. 40¢40¢10%
 Sargent 70¢10¢10%
 Stearns' 40¢10%

Machine—

List Jan. 1, '93.
 Flat or Round Head, Iron 60%
 Flat or Round Head, Brass 60%
 Set and Cap—
 Set (Iron or Steel) 75¢75¢10%
 Sq. Hd. Cap 70¢70¢10%
 Hex. Hd. Cap 70¢70¢10%

Wood—

List Nov. 10, 1898. Discounts adopted June 23, '99.
 Flat Head, Iron 82 1/2%
 Round Head, Iron 80%
 Flat Head, Brass 77 1/2¢10%
 Round Head, Brass 72 1/2¢10%
 Flat Head, Bronze 72 1/2¢
 Round Head, Bronze 70%
 Drive Screws 35%
 Note.—An extra 5 or 10% is often given.

Scroll Saws—See Saws, Scroll.**Scythes—**

Grass and Grain 60¢10%

Scythe Snaths—

See Snaths, Scythe.

Seeders—**Raisin—**

Enterprise 25¢30%

Sets—**Awl and Tool—**

Brad Awl and Tool Sets:
 Wood Hdl., 10 Awls doz. \$2.00
 Wood Hdl., 14 Awls, 6 Tools doz. \$2.25@2.40
 Alken's Sets, Awls and Tools:
 No. 20, # doz. \$10.00, 60¢10¢10%
 Fray's Adj. Tool Hdl's, Nos. 1, #12; 2, #18; 3, #12; 4, #9; 5, #7 50%
 Millers Falls Adj. Tool Hdl's, No. 1, #12; No. 4, #12; No. 5, #18 15¢10%
 Stanley's Excelsior:
 No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50 40¢10¢40¢10%
 Garden Tool Sets—
 Ft. Madison Rakes, Shovel and Hoe # doz. \$9.00

Nail—

Round, assorted gro. \$3.00@3.50
 Octagon gro. \$4.00@4.75
 Buck Brothers 27 1/2%
 Cannon's Diamond Point, # gr. \$19 25%
 Snell's Corrugated, Cup Pt. 50%
 Snell's Knarled, Cup Pt. 60%
 Rivet—
 Regular list 70¢70¢10%

Saw—

Alken's Genuine # doz. \$4.50@5.00
 Alken's Imitation # doz. \$3.00@3.10
 Alken's Criterion # doz. \$8.00
 Alken's Adjustable # doz. \$6.00
 Bemis & Call Co.'s Cross Cut 30¢5%
 Bemis & Call Co.'s Plate 20%
 Bemis & Call Spring Hammer 80¢5%
 Diston's Star and Moon ch 25%
 Hammer, Bemis & Call Co.'s new Pat. 45%

Morrill's No. 1, \$15.00 40¢20%
 Nos. 3 and 4, Cross Cut, \$23.00, 40¢20%
 No. 5, Mill, \$31.00 40¢20%
 No. 10, \$15.50 40¢20%
 No. 11, \$16.00 40¢20%
 Taintor Positive, # doz. \$18 60%

Sharpeners, Knife—

Tanite Mills # gross, \$14.40 25¢33 1/3%

Shaves, Spoke—

Iron doz. \$1.00@1.25
 Wood doz. \$1.75@2.00
 Bailey's (Stanley R. & L. Co.) 50¢10%
 Goodell's, # doz. \$9.00 15¢10%
 Stearns' 40¢10%

Shears—

Cast Iron 7 8 9 in.
 Best \$16.00 18.00 20.00 gro.
 Good \$13.00 15.00 17.00 gro.
 Cheap \$9.00 10.00 11.00 gro.
 Straight Trimmers, &c.:
 Best quality, Jap. 70¢5¢@70¢10%
 Nickel, 60¢5¢@60¢10%
 Fair qual, Jap. 80¢10¢@80¢10%
 Nickel 75¢5¢@75¢10%

Acme Cast Shears 40¢40¢5%
 Davenport Cutlery Co. 60¢60¢10%
 Heinsch's Tailors' Shears 40¢40¢5%
 Seymour's, Jap. 70¢70¢5%
 Seymour's Nickel 60¢60¢5%
 Seymour's Tailors' Shears 40%
 Wilkinson's Hedge 50%
 Wilkinson's Sheep 15%

Tinnars' Snips—

Forged Handles, Steel Blades, 20¢10%
 Malleable Handles, Laid with Steel 40%

Forged Handles, Steel Blades, Berlin, 40¢10%

Niagara Snips 40%
 Seymour's 40¢40¢5%

Pruning Shears and Tools—

Diston's Combined Pruning Hook and Saw, # doz. \$18.00 25¢25¢10%
 Diston's Pruning Hook, # doz. \$12.00 25¢25¢10%
 John T. Henry Mfg. Company:
 Pruning Shears all grades 50¢5%
 Orange Shears 50¢30%
 Grape 50¢10%
 Tree Pruners 75%
 P. S. & W. Co. 60%
 Seymour's 60¢10¢10¢10%
 Sheaves—Sliding Door—
 Stowell's Anti-Friction 50%
 Patent Roller 60¢10¢60¢10%
 Patent Roller Hatfield's, Sargent's list, 80¢10¢80¢10%
 Reading 70¢10¢75%
 R. & E. 60¢60¢10%
 Sargent's list 60¢60¢10%

Shells—**Shells, Empty—**

Brass Shot Shells, Club, Rival, Climax, 65¢24¢
 Brass Shot Shells, first quality, 60¢24¢
 First quality 4, 8, 10 and 12 gauge, 25¢10¢24¢
 First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (7.50 list) 20¢10¢24¢
 New Victor, all gauges 16¢24¢
 Quiver Shot on 1/2 L. a. u. 33¢55¢
 Smokeless brand, 12, 10, 16 gauge, 33¢10¢24¢
 Star, Club, Rival and Climax Brands 33¢10¢24¢
 Trap brand 12 and 10 gauge, 33¢10¢24¢
 From one Club, Blu. Rival, Yellow Rival and New Climax 30¢55¢
 Shells, Loaded—
 Loaded with Black Powder 40¢5¢@40¢10%
 Loaded with Nitro Powder 40¢10¢10¢5¢@40¢10¢10%
 Loaded with Semi-Smokeless Powder 40¢5¢@40¢10%
 Ship Tools—
 L. & I. J. White 25%
 Shoes, Horse, Mule, &c.—
 Factory Shipments:
 No. 2 and larger per 100 lbs., \$3.35
 Shot—
 Drop, up to B, 25-lb. bag \$1.40@1.45
 Drop, up to B, 5-lb. bag30
 Drop, B and larger, 25-lb. bag \$1.65@1.70
 Drop, B and larger, 5-lb. bag25
 Buck, 25 lb. bag \$1.65@1.70
 Buck, 5-lb. bag35
 Chilled, 25 lb. bag \$1.68@1.75
 Dust Shot, 25 lb. bag 2.00
 Dust Shot, 5-lb. bag50
 These prices are often shaded 5¢10¢. 25 lb. bag, especially in the West, and merchants often undersell the manufacturers.

Shovels and Spades—

Combination price to small trad are as follows:

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

1st Grade. 2d Grade.

Plain Back \$9.30 \$8.40

Strap Back 8.70 7.80

Cleveland Pat'n 9.00 8.10

C3, D3, 3d Grade. 4th Grade.

Plain Back \$7.50 \$6.60

Strap Back 6.90 6.00

Cleveland Pat'n 7.30 6.40

All other sizes add 30¢ doz.

Note.—A further advance of 60 cents to retailers has been made by manufacturers, and is being put into effect by jobbers generally.

Shovels and Tongs—

Brass Head.....60¢10¢60¢10¢10¢
Iron Head.....60¢10¢60¢10¢5¢

Sieves and Sifters—

Hunter's Imitation...gro. \$9.00@9.50
Buffalo Metallic, S. S. & Co., # gr.:
16 16x18 18 18x20
Blued...\$10.80 \$11.40 \$11.40 \$12.00
Tinned...11.40 12.00 12.00 12.00
Eclipse.....# gr. \$9.00@9.50
Hunter's Genuine...# gr. \$10.00@10.50
Shaker (Barber's Pat.) Flour Sifters...
doz., \$2.00.....25¢

Sieves, Wooden Rim—

Mesh 18, Nested, doz.....\$0.80
Mesh 20, Nested, doz......90
Mesh 24, Nested, doz.....1.00

Sinks—**Cast Iron—**

Low list.....65¢65¢5¢
NOTE.—The low list is now generally used, but some jobbers use high list.

Wrought Steel—

Columbus Galv'd and Enamelled, 50¢10¢
Columbus, Painted.....30¢10¢
L. & G.....55¢10¢

Skins, Wagon—

Malleable Iron.....75¢75¢10¢
Steel.....65¢65¢5¢
I. L. B. & Co. Steel.....45¢

Slates—

"D" Slates.....50¢10¢50¢10¢10¢
Unexcelled Noiseless Slates.....
60¢6 tens@60¢6 tens@5¢
Wire Bound.....60¢10¢50¢
Double Slates, add \$1 case, net.

Slaw Cutters—See Cutters.**Snaps, Harness—**

German.....50¢50¢5¢
Covert Mfg. Co.:
Derby.....45¢2¢
High Grade.....45¢2¢
Jockey.....45¢2¢
Trojan.....45¢2¢
Covert's Saddlery Works:
Banner.....75¢
Crown.....70¢
Triumph.....70¢
W. & E. T. Fitch:
Bristol.....40¢10¢
Empire.....50¢5¢
National.....50¢5¢
Clipper.....50¢10¢5¢
Champion.....40¢10¢
Victor.....60¢5¢
One da' Commu. Ty.....85¢85¢10¢
Solid Sw. vel.....85¢10¢45¢10¢10¢
Sargent's Patent Guarded.....
70¢10¢70¢10¢10¢

Snaths—

Scythe.....55¢

Snips, Tinnners'—See Shears.**Soldering Irons—**

See Irons, Soldering.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—**Silver Plated—**

Flat Ware.....50¢10¢60¢10¢
Wm. Rogers Mfg. Co.....50¢10¢

Miscellaneous—

German Silver.....60¢10¢
Wm. Rogers Mfg. Co.:
18% German Silver.....60¢
Rogers' Silver Metal.....50¢10¢

Springs—**Door—**

Gem (Coll).....20¢
Star (Coll).....30¢
Torrey's Rod, 39 in...# doz. \$1.10@1.25
Warner's No. 1, # doz. \$1.50; No. 2,
\$3.40.....55¢55¢10¢
Victor (Coll).....60¢10¢60¢10¢5¢

Carriage, Wagon, &c.

1½ in. and wider...Blk. Hf Brt. Brt.
Tested and Temp 5 5¼ 5½c lb
Oil Tested and
Tempered.....6 6¼ 6½c lb
Cliff's Bolster Springs.....40¢2¢
Cliff's Seat Springs.....# pair 45¢

Sprinklers, Lawn—

Enterprise.....25¢30¢
Philadelphia No. 1, # doz. \$12; No. 2,
\$15; No. 3, \$24.....35¢

Squares—

Nickel plated...List May 1, '95.
Steel and Iron.....70¢10¢75¢10¢
Rosewood Hd. Try Square and T-
Bevels.....60¢10¢10¢70¢
Iron Hd. Try Squares and T-Bevels,
40¢10¢40¢10¢10¢

Diaton's Try Sq. and T-Bevels.....60¢10¢
Winterbottom's Try and Miter...50¢10¢

Squeezers—**Lemon—**

Wood, Common, gro. No. 0. \$5.00;
No. 1, \$6.50; No. 2, \$10.00.
Wood, Porcelain Lined:
Cheap.....doz. \$2.50@2.75
Good Grade.....doz. \$3.00@3.50

Tinned Iron.....doz. \$0.80@1.25
Iron, Porcelain Lined doz. \$3.25@3.50
Jennings' Star.....# doz. \$1.85@1.90
King.....# doz. \$2.00

Staples—

Barbed Blind.....lb. 8¢8¼¢
Electricians' Association list, 80¢10¢
Fence Staples, same price as Barbed
Wire. See Trade Report.
Poultry Netting.....lb. 4¢4¼¢
Grand Crossing Tack Co.'s list.....75¢10¢

Steels, Butchers'—

Dick's.....40¢
Foster Bros'.....40¢
C. & A. Hoffmann's.....40¢
Nichols Bros.....50¢
John Wilson's, list Sept. 1, '94.....25¢

Steelyards.....40¢40¢10¢**Stocks and Dies—**

Blacksmiths'.....35¢40¢
Gardner.....40¢10¢
Green River.....25¢
Lightning Screw Plate.....25¢
Little Giant.....25¢
Reece's New Screw Plates.....25¢30¢
Reversible Hatchet.....25¢

Stone—**Scythe Stones—**

Pike Mfg. Co., list '95-'96.....33½¢
Cleveland Stone Co., list Nov., '92, 33½¢

Oil Stones, &c.

Pike Mfg. Co.:
Hindustan No. 1, # 10.....8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra.....33½¢
5 to 9 in.....33½¢10¢
Turkey Slips.....\$2.00
Lily White Washita.....60¢
Rosa Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 2.....40¢
Lily White Slips.....90¢
Rosa Red Slips.....90¢
Washita Slips, Extra.....70¢
Arkansas Stone, No. 1, 3 to 5 in. \$2.80
Arkansas Stone, No. 1, 5 to 8 in. \$3.50
Tanite Mills:
Emery Oil, # doz. \$5.00.....50¢60¢

Stoners—**Cherry—**

Enterprise.....25¢30¢

Stops, Bench—

Millers Falls.....15¢10¢
Morrill's.....# doz. No. 1, \$10.00; No. 2,
\$11.00, 40¢20¢
Stearns'.....90¢5¢

Stops, Window—

Taplin's.....45¢

Stove Boards—

See Boards, Stove.

Stove Polish—See Polish, Stove.**Straps, Box—**

Cary's Universal.....20¢10¢10¢

Stretchers, Carpet—

Cast Iron, Steel Points...doz. 70¢75¢
Cast Steel, Polished.....doz. \$2.25
Socket.....doz. \$1.75

Stuffers, Sausage—

Miles' Challenge, # doz. \$20.....50¢50¢5¢
Enterprise Mfg. Co., list Jan. 17, '93.....
25¢25¢7½¢
National Specialty Mfg. Co., list Jan.
1, '97.....25¢

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks:
American Blued.....90¢20¢90¢25¢
American Tinned.....90¢20¢90¢25¢
American Cut Tacks.....90¢10¢10¢5¢
Swedes Iron Tacks.....90¢10¢90¢20¢
Upholsterers' Tacks, 90¢25¢90¢10¢5¢
Gimp Tacks.....90¢25¢90¢10¢5¢
Lace Tacks.....35¢20¢85¢30¢
Trimmers' Tacks.....90¢10¢90¢20¢
Looking Glass Tacks.....70¢70¢10¢
Bill Posters' and Railroad Tack.....
90¢25¢90¢35¢
Hungarian Nails.....80¢5¢80¢10¢
Common and Patent Brads, 75¢75¢5¢
Trunk and Clout Nails:
Blued.....80¢80¢10¢
Tinned.....80¢80¢10¢

Miscellaneous—

Double Point Tacks.....90¢5¢
Steel Wire Brads, R. & E. Mfg.
Co.'s list.....50¢10¢60¢
See also Nails, Wire.

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. \$3.00
Emerald, S. S. & Co.....60-gal. \$3.75
Queen City S. S. & Co., 60-gal. each, \$4.00;
100-gal. \$6.25; 120-gal. \$8.50; 200-
gal. \$14.00; 250-gal. \$17.75

Tapes, Measuring—

American Asses' Skin.....40¢10¢50¢
Patent Leather.....25¢25¢10¢
Steel.....33½¢40¢
Chesterman's.....25¢25¢5¢
Keuffel & Esser Co., Steel and Metallic,
new list, 1898.....35¢
Lufkin's Steel and Metallic.....33½¢33½¢5¢

Thermometers—

Tin Case.....80¢10¢80¢10¢10¢

Ties, Bale—Steel.

Standard Wire.....50¢10¢5¢

Ties, Wall—

Cleveland, Steel.....# 1000, \$10.00

Tinners' Shears, &c.—

See Shears, Tinnners', &c.

Tinware—

Stamped, Japanned and Pieced, sold
very generally at net prices.

Tire Benders, Upsetters,

&c.—See Benders and Upset-

ters, Tire.

Tobacco Cutters—

See Cutters, Tobacco.

Tools—

Coopers'—

L. & I. J. White.....20¢20¢5¢

Saw—

Atkins' new list.....40¢
Simonds'.....33½¢

Transom Lifters—

See Lifters, Transom.

Traps—Game—

Newhouse.....50¢5¢50¢10¢
Oneida Pattern.....80¢80¢5¢

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8@9c
Mouse, Round or Square Wire.....
doz. \$0.85@1.00

Dandy.....# doz. \$1.75

Marty French Rat and Mouse Traps
(Genuine):

No. 1, Rat.....# doz. \$15.00
No. 3, Rat.....# doz. \$5.85
No. 3½, Rat.....# doz. \$4.50
No. 4, Mouse.....# doz. \$4.30
No. 5, Mouse.....# doz. \$3.00

Schuyler's Rat Killer, No. 1, # gr. \$13.50
No. 2, # gr. \$15.00

Out o' Sight, Mouse, No. 1, # doz. 80¢;
Rat, No. 2, \$1.25; Mole, \$6.00;
Gopher, \$1.50; Stop Thief, No. 1,
\$1.25; No. 2, \$1.50.

Fly—

Balloon, Globe or Acme.....
doz. \$1.25; gro. \$14.50@15.00

Harper, Champion or Paragon
doz. \$1.50; gro. \$17.00

Trimmers, Spoke—

Bonney's No. 1, # doz. \$2.75; No. 2,
\$3.75

Douglas', # doz. \$9.00.....20¢10¢
Stearns'.....20¢10¢

Trowels—

Diaton Brick and Pointing.....80¢
Diaton Plastering.....25¢
Diaton "Standard Brand" and Ga-
den Trowels.....40¢
Peace's Plastering.....25¢25¢5¢
Rose Brick and Plastering.....30¢10¢10¢
Woodrough & McParlin, Plastering, 25¢10¢

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40¢
Daisy Stove Trucks, Improved pattern
doz. \$18.00

Tubs, Wash—

Galvanized, # doz. \$5.25 6 00 6 75
Galvanized S. S. & Co., with Wringer
Attachment, # doz. No. 10, \$6.35;
No. 20, \$6.75; No. 30.....\$7 50

Twine—

White Sisal, 500 feet to lb.....9½¢
Standard, 500 feet to lb.....9½¢
Manila, 600 feet to lb.....10½¢
Pure Manila, 650 feet to lb.....10½¢

Miscellaneous—

Flax Twine—

No. 2, ¼ and ½-lb. Balls.....20¢ 25¢
No. 12, ¼ and ½-lb. Balls.....17¢ 20¢
No. 13, ¼ and ½-lb. Balls.....17¢ 17¢
No. 24, ¼ and ½-lb. Balls.....17¢ 17¢
No. 36, ¼ and ½-lb. Balls.....15¢ 16¢
Chalk Line, Cotton, ½-lb. Balls.....
18¢20¢

Cotton Mops, 6, 9, 12 and 15 lb. to
doz.....8@9c
Cotton Wrapping, 5 Balls to lb.....
9@16c

American 2-Ply Hemp, ¼ and ½-lb.
Balls.....9@10c
American 3-Ply Hemp, 1-lb. Balls.....
9@10c
American 3-Ply Hemp, 1-lb. Balls
(Spring Twine).....10¢10¢

India 2-Ply Hemp, ¼ and ½-lb.

Balls (Spring Twine).....8c

India 3-Ply Hemp, 1-lb. Balls.....8c

India 3-Ply Hemp, 1½-lb. Balls.....7@7½c

2, 3, 4 and 5-Ply Jute, ¼-lb. Balls.....6½c

Mason Line, Linen, ½-lb. Balls.....45c

No. 26, Mattress, ¼ and ½-lb. Balls 34c

Wool.....5@5½c

Vises—

Solid Box.....60¢60¢5¢

Bonney's Saw Vises.....40¢10¢

Parallel—

Bonney's.....40¢10¢

Fisher & Norris Double Screw.....15¢10¢

Hollands'.....40¢40¢10¢

Massey's Perfect.....20¢25¢

Massey's Clincher.....40¢40¢10¢

Merrill's.....25¢

Miller's Falls.....25¢10¢

Parker's.....20¢25¢

Parker's Oval Slide.....50¢10¢

Parker's Victor.....20¢25¢

Prentiss.....70¢10¢70¢10¢10¢

Sargent's.....40¢

Simpson's Adjustable.....25¢30¢

Stephens' Woodworking.....25¢

Trenton.....40¢5¢40¢10¢

Saw Filers—

Bonney's Nos. 2 & 3, \$15.00.....40¢10¢

Diaton's D 3 Clamp and Guide, # 1 &
30.....25¢

Reading.....40¢10¢

Stearns' Common, Nos. 0, 1, 2 & 3.....50¢

Stearns' Rubber Jaw, Nos. 10 & 33, 33½¢

Wentworth's Rubber Jaw, Nos. 1, 2
and 3.....40¢

Miscellaneous—

Signal & Keeler Combination Pipe

Vise.....60¢5¢

Parker's Combination Pipe:

87 Series.....60¢

187 Series.....60¢5¢

No. 870.....40¢

Wads—Price Per M.

B. E., 11 up.....60¢

B. E., 9 and 10.....70¢

B. E., 8.....80¢

B. E., 7.....80¢

F. E., 11 up.....\$1.00

F. E., 9 and 10.....1.55

F. E., 8.....1.50

F. E., 7.....1.50

Ely's B. E., 11 and larger.....\$1.70@1.75

Ely's P. E., 12 to 20.....\$3.00@3.25

Wagon Jacks—

See Jacks, Wagon.

Ware, Hollow—

Aluminum—

S. S. & Co. Reduced List.....40¢

Cast Iron, Hollow—

Stove Hollow Ware:

Ground.....60¢10¢65¢

Unground.....60¢10¢10¢70¢

White Enamelled Ware:

Maslin Kettles.....75¢10¢75¢10¢5¢

Boilers and Saucepans.....60¢60¢5¢

Tinned Boilers and Saucepans.....60¢5¢

See also Pots, Glue.

Note.—See Trade Report.

Enamelled—

Agate and Granite Ware, list Jan. 1,
'94, revised Jan. 2, '95.....40¢10¢

Second Quality.....70¢10¢70¢10¢10¢

CURRENT METAL PRICES.

JULY 12, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6# #3; Square, 0.8# #3	
1 to 1 1/2 in. round and square...	# 2.15 @ 2.30
1 1/2 to 4 in. x 3/4 to 1 in.	# 2.15 @ 2.30
Refined Iron:	
1 to 1 1/2 in. round and square...	# 2.25 @ 2.30
1 1/2 to 4 in. x 3/4 to 1 in.	# 2.25 @ 2.30
1 1/2 to 4 in. x 3/4 to 5-16.....	# 2.45 @ 2.50
Angles:	
8 in. x 1/2 in. and larger.....	2.35
1 1/2 to 2 1/2 in. x 1/2 in. and heavier.....	2.45
1 to 3 in. x 3-16 in.	2.65
1 to 3 in. x 1/2 in.	2.65
Tees:	
1 in.	2.75
1 1/2 to 2 1/2 in.	2.55
8 in. and larger.....	2.45
Beams.....	2.75
Channels.....	2.75
Rods—3/4 and 1-1/2 round and square, # 2.45 @ 2.50	
Bands—1 to 6 x 3-16 to No. 12.....	# 2.60 @ 2.70
"Burden's Best" Iron, base price, # 2.80	
Burden's "H. B. & S. Iron, base price, # 2.80	
"Ulster".....	2.80
Norway Bars.....	3.50 @ 4.00
Norway Shapes.....	4.00 @ 4.25

Merchant Steel from Store—

Open Hearth and Bessemer Machinery.....	2.50 to 2.60
Tire Calk, Tire and Sleigh Shoes.....	2 1/2 to 3
Best Cast Steel, base price in small lots.....	7
Best Cast Steel Machinery, base price in small lots.....	5

Soft Steel Sheets—

1/4 inch.....	2.85	No. 14.....	3.10
3-16 inch.....	2.95	No. 16.....	3.20
No. 8.....	2.95	No. 18.....	3.25
No. 10.....	3.00	No. 20.....	3.30
No. 12.....	3.05	No. 22.....	3.35

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16.....	# 2.90	3.10
Nos. 17 to 21.....	# 3.00	3.20
Nos. 22 to 24.....	# 3.10	3.30
Nos. 25 and 26.....	# 3.20	3.40
No. 27.....	# 3.30	3.50
No. 28.....	# 3.40	3.60

Russia, Planished, &c.

Genuine Russ a, according to assortment.....	# 10 1/2
Patent Planished.....	# A, 9 1/2; B, 8 1/2; net.
Patent Planished Sheet Steel.....	# 8 1/2

Galvanized.

	B. R.	7 1/2% off.
Nos. 10 to 16.....	# 12 1/2	
Nos. 17 to 21.....	# 13 1/2	
Nos. 22 to 24.....	# 14 1/2	
Nos. 25 to 26.....	# 15 1/2	
No. 27.....	# 16 1/2	
No. 28.....	# 17 1/2	
No. 30.....	# 19 1/2	
80 in. 1 1/2 # 2 higher.	# 21 1/2	

Foreign Steel from Store—

Best Cast.....	# 14
Extra Cast.....	# 16
Swaged Cast.....	# 16
Best Double Shear.....	# 14
Blister, 1st quality.....	# 12
German Steel, Best.....	# 10
2d quality.....	# 9
2d quality.....	# 8
Sheet Cast Steel, 1st quality.....	# 14
2d quality.....	# 13
2d quality.....	# 11
R. Muesel's "Special".....	# 7 1/2
"Titanic".....	# 19
Hobson's Choice XX Extra Best.....	# 35
Jessop Self Hardening.....	# 40
Seamans' "Nelson" Steel.....	# 40
Hobson Self-Hardening.....	# 40

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb.
Banca, Pigs.....	29 1/2
Straits, Pigs.....	29
Straits in Bars.....	29 1/2

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IX, 14 x 20.....	\$0.25 @ 0.50
IX, 14 x 30.....	7.75 @ 8.00
Meyn Grade:	
IX, 14 x 20.....	6.00
IX, 14 x 30.....	7.25
Allaway Grade:	
IX, 14 x 20.....	5.25
IX, 14 x 30.....	6.25

American Coke Plates—Bright—

IX, 14 x 20.....	108
IX, 14 x 30.....	\$1.50 @ 1.60
IX, 14 x 20.....	5.40 @ 5.50
IX, 14 x 30.....	6.05 @ 6.15

American Terne Plates—

IX, 20 x 28.....	\$9.00 @ 9.50
IX, 20 x 36.....	11.0 @ 11.50

Tin Boiler Plates, American—

IX, 14 x 20.....	112 sheets.....	\$10.50
IX, 14 x 28.....	112 sheets.....	11.45
IX, 14 x 31.....	112 sheets.....	12.65

Copper—

Duty: Pig, Bar and Ingot and Old Copper free

Manufactured, 2 1/2¢ # lb.

Ingot—

Lake.....	10 1/2
Anson's grade Casting.....	18 1/2

Sheet and Bolt—

February 2, 1899.

Prices, in cents per pound.

Sheet 30 x 60.

	Not wider than	Not longer than	And longer than	64 oz. & over, 9 lb. sheet, 30 x 60 and heavier.	30 oz. to 64 oz. 25 to 50 lb.	24 oz. to 30 oz. 18 1/2 to 25 lb.	16 oz. to 24 oz. 12 1/2 to 15 1/2 lb.	14 oz. and 15 oz. 11 to 12 1/2 lb.	12 oz. and 13 oz. 9 1/2 to 11 lb.	10 oz. and 11 oz. 8 oz. and 9 oz. 6 1/2 to 7 1/2 lb.	Lighter than 8 oz.
Ina.	Ina.	Ina.	Ina.	Ina.	Ina.	Ina.	Ina.	Ina.	Ina.	Ina.	Ina.
30	72	96	120	144	168	192	216	240	264	288	312
36	84	108	144	176	208	240	272	304	336	368	400
42	96	120	160	192	224	256	288	320	352	384	416
48	108	136	176	208	240	272	304	336	368	400	432
54	120	144	192	224	256	288	320	352	384	416	448
60	132	156	208	240	272	304	336	368	400	432	464
66	144	168	224	256	288	320	352	384	416	448	480
72	156	180	240	272	304	336	368	400	432	464	496
78	168	192	256	288	320	352	384	416	448	480	512
84	180	204	272	304	336	368	400	432	464	496	528
90	192	216	288	320	352	384	416	448	480	512	544
96	204	224	304	336	368	400	432	464	496	528	560
102	216	232	320	352	384	416	448	480	512	544	576
108	224	240	336	368	400	432	464	496	528	560	592
114	232	248	352	384	416	448	480	512	544	576	608
120	240	256	368	400	432	464	496	528	560	592	624
126	248	264	384	416	448	480	512	544	576	608	640
132	256	272	400	432	464	496	528	560	592	624	656
138	264	280	416	448	480	512	544	576	608	640	672
144	272	288	432	464	496	528	560	592	624	656	688
150	280	296	448	480	512	544	576	608	640	672	704
156	288	304	464	496	528	560	592	624	656	688	720
162	296	312	480	512	544	576	608	640	672	704	736
168	304	320	496	528	560	592	624	656	688	720	752
174	312	328	512	544	576	608	640	672	704	736	768
180	320	336	528	560	592	624	656	688	720	752	784
186	328	344	544	576	608	640	672	704	736	768	800
192	336	352	560	592	624	656	688	720	752	784	816
198	344	360	576	608	640	672	704	736	768	800	832
204	352	368	592	624	656	688	720	752	784	816	848
210	360	376	608	640	672	704	736	768	800	832	864
216	368	384	624	656	688	720	752	784	816	848	880
222	376	392	640	672	704	736	768	800	832	864	896
228	384	400	656	688	720	752	784	816	848	880	912
234	392	408	672	704	736	768	800	832	864	896	928
240	400	416	688	720	752	784	816	848	880	912	944
246	408	424	704	736	768	800	832	864	896	928	960
252	416	432	720	752	784	816	848	880	912	944	976
258	424	440	736	768	800	832	864	896	928	960	992
264	432	448	752	784	816	848	880	912	944	976	1008
270	440	456	768	800	832	864	896	928	960	992	1024
276	448	464	784	816	848	880	912	944	976	1008	1040
282	456	472	800	832	864	896	928	960	992	1024	1056
288	464	480	816	848	880	912	944	976	1008	1040	1072
294	472	488	832	864	896	928	960	992	1024	1056	1088
300	480	496	848	880	912	944	976	1008	1040	1072	1104
306	488	504	864	896	928	960	992	1024	1056	1088	1120
312	496	512	880	912	944	976	1008	1040	1072	1104	1136
318	504	520	896	928	960	992	1024	1056	1088	1120	1152
324	512	528	912	944	976	1008	1040	1072	1104	1136	1168
330	520	536	928	960	992	1024	1056	1088	1120	1152	1184
336	528	544	944	976	1008	1040	1072	1104	1136	1168	1200
342	536	552	960	992	1024	1056	1088	1120	1152	1184	1216
348	544	560	976	1008	1040	1072	1104	1136	1168	1200	1232
354	552	568	992	1024	1056	1088	1120	1152	1184	1216	1248
360	560	576	1008	1040	1072	1104	1136	1168	1200	1232	1264
366	568	584	1024	1056	1088	1120	1152	1184	1216	1248	1280
372	576	592	1040	1072	1104	1136	1168	1200	1232	1264	1296
378	584	600	1056	1088	1120	1152	1184	1216	1248	1280	1312
384	592	608	1072	1104	1136	1168	1200	1232	1264	1296	1328
390	600	616	1088	1120	1152	1184	1216	1248	1280	1312	1344
396	608	624	1104	1136	1168	1200	1232	1264	1296	1328	1360
402	616	632	1120	1152	1184	1216	1248	1280	1312	1344	1376
408	624	640	1136	1168	1200	1232	1264	1296	1328	1360	1392
414	632	648	1152	1184	1216	1248	1280	1312	1344	1376	1408
420	640	656	1168	1200	1232	1264	1296	1328	1360	1392	1424
426	648	664	1184	1216	1248	1280	1312	1344	1376	1408	1440
432	656	672	1200	1232	1264	1296	1328	1360	1392	1424	1456
438	664	680	1216	1248	1280	1312	1344	1376	1408	1440	1472
444	672	688	1232	1264	1296	1328	1360	1392	1424	1456	1488
450	680	696	1248	1280	1312	1344	1376	1408	1440	1472	1504
456	688	704	1264	1296	1328	1360	1392	1424	1456	1488	1520
462	696	712	1280	1312	1344	1376	1408	1440	1472	1504	1536
468	704	720	1296	1328	1360	1392	1424	1456	1488	1520	1552
474	712	728	1312	1344	1376	1408	1440	1472	1504	1536	1568
480	720	736	1328	1360	1392	1424	1456	1488	1520	1552	1584
486	728	744	1344	1376	1408	1440	1472	1504	1536	1568	1600
492	736	752	1360	1392	1424	1456	1488	1520	1552	1584	1616
498	744	760	1376	1408	1440	1472	1504	1536	1568	1600	1632
504	752	768	1392	1424	1456	1488	1520	1552	1584	1616	1648
510	760	776	1408	1440	1472	1504	1536	1568	1600	1632	1664
516	768	784	1424	1456	1488	1520	1552	1584	1616	1648	1680
522	776	792	1440	1472	1504	1536	1568	1600	1632	1664	1696
528	784	800	1456	1488	1520	1552	1584	1616	1648	1680	1712
534	792	808	1472	1504	1536	1568	1600	1632	1664	1696	1728
540	800	816	1488	1520	1552	1584	1616	1648	1680	1712	1744
546	808	824	1504	1536	1568	1600	1632	1664	1696	1728	1760
552	816	832	1520	1552	1584	1616	1648	1680	1712	1744	1776
558	824	840	1536	1568	1600	1632	1664	1696	1728	1760	1792
564	832	848	1552	1584	1616	1648	1680	1712	1744	1776	1808
570	840	856	1568	1600	1632	1664	1696	1728	1760	1792	1824
576	848	864	1584	1616	1648	1680	1712	1744	1776	1808	1840
582	856	872	1600	1632	1664	1696	1728	1760	1792	1824	1856
588	864	880	1616	1648	1680	1712	1744	1776	1808	1840	1872
594	872	888	1632	1664	1696	1728	1760	1792	1824	1856	1888
600	880	896	1648	1680	1712	1744	1776	1808	1840	1872	1904
606	888	904	1664	1696	1728	1760	1792	1824	1856	1888	1920
612	896	912	1680	1712	1744	1776	1808	1840	1872	1904	1936
618	904	920	1696	1728	1760	1792	1824	1856	1888	1920	1952
624	912	928	1712	1744	1776	1808	1840	1872	1904	1936	1968
630	920	936	1728	1760	1792	1824	1856	1888	1920	1952	1984
636	928	944	1744	1776	1808	1840	1872	1904	1936	1968	2000
642	936	952	1760	1792	1824	1856	1888	1920	1952	1984	2016
648	944	960	1776	1808	1840	1872	1904	1936	1968	2000	2032
654	952	968	1792	1824	1856	1888	1920	1952	1984	2016	2048
660	960	976	1808	1840	1872	1904	1936	1968	2000	2032	2064
666	968	984	1824	1856	1888	1920	1952	1984	2016	2048	2080
672	976	992	1840	1872	1904	1936	1968	2000	2032	2064	2096
678	984	1000	1856	1888	1920	1952	1984	2016	2048	2080	2112
684	992	1008	1872	1904	1936	1968	2000	2032	2064	2096	2128
690	1000	1016	1888	1920	1952	1984	2016	2048	2080	2112	2144
696	1008	1024	1904	1936	1968	2000	2032	2064	2096	2128	2160
702	1016	1032	1920	1952	1984	2016	2048	2080	2112	2144	2176
708	1024	1040	1936	1968	2000	2032	2064	2096	2128	2160	2192
714	1032	1048	1952	1984	2016	2048					

